## Content Area: Mathematics

<table>
<thead>
<tr>
<th>Standard</th>
<th>Grade Level Expectations (GLE)</th>
<th>Grade Level</th>
<th>2nd Grade</th>
<th>GLE Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Number Sense, Properties, and Operations</td>
<td>1. The whole number system describes place value relationships through 1,000 and forms the foundation for efficient algorithms</td>
<td>2nd Grade</td>
<td>2016-2017</td>
<td>MA10-GR.2.5.1-GLE.1</td>
</tr>
<tr>
<td></td>
<td>2. Formulate, represent, and use strategies to add and subtract within 100 with flexibility, accuracy, and efficiency</td>
<td></td>
<td></td>
<td>MA10-GR.2.5.1-GLE.2</td>
</tr>
<tr>
<td>2. Patterns, Functions, and Algebraic Structures</td>
<td>Expectations for this standard are integrated into the other standards at this grade level.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Data Analysis, Statistics, and Probability</td>
<td>1. Visual displays of data can be constructed in a variety of formats to solve problems</td>
<td></td>
<td></td>
<td>MA10-GR.2.5.3-GLE.1</td>
</tr>
<tr>
<td>4. Shape, Dimension, and Geometric Relationships</td>
<td>1. Shapes can be described by their attributes and used to represent part/whole relationships</td>
<td></td>
<td></td>
<td>MA10-GR.2.5.4-GLE.1</td>
</tr>
<tr>
<td></td>
<td>2. Some attributes of objects are measurable and can be quantified using different tools</td>
<td></td>
<td></td>
<td>MA10-GR.2.5.4-GLE.2</td>
</tr>
</tbody>
</table>

### 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.

### Module Engaged NY

<table>
<thead>
<tr>
<th>Module</th>
<th>Length of Teaching Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>Module 1-Sums and Differences</td>
<td>August 22nd - September 2nd</td>
</tr>
<tr>
<td>Module 2-Addition and Subtraction</td>
<td>September 6th - September 22nd</td>
</tr>
<tr>
<td>Module 3-Place Value, Counting and Comparison of Numbers to 1,000</td>
<td>September 23rd - October 26th</td>
</tr>
<tr>
<td>Module 4-Addition and Subtraction Within 200 with Word Problems to 100</td>
<td>October 27th - December 20th</td>
</tr>
<tr>
<td>Module 5-Addition and Subtraction Within 1,000 with word Problems to 100</td>
<td>January 4th - February 9th</td>
</tr>
<tr>
<td>Module 6-Foundations of Multiplication and Division</td>
<td>February 10th - March 8th</td>
</tr>
<tr>
<td>Module 7-Problem Solving with Length, Money and Data</td>
<td>March 9th - April 20th</td>
</tr>
<tr>
<td>Module 8-Time, Shape and Fractions as Equal Parts</td>
<td>April 21st - May 24th</td>
</tr>
</tbody>
</table>
**2nd Grade Module 1 Knowledge Packet**  
**Sums and Differences to 100**  
**2016-2017 Module Window: August 22- September 2**

<table>
<thead>
<tr>
<th>Foundational standards to support pre-requisite needs</th>
<th>Examples of Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>K.OA.3</strong> Decompose numbers less than or equal to 10 into pairs in more than one way, e.g., by using objects or drawings, and record each decomposition by a drawing or equation (e.g., 5 = 2 + 3 and 5 = 4 + 1).</td>
<td>What do students need to know and be able to do? What does mastery of standard look like?</td>
</tr>
</tbody>
</table>

**What do students need to know and be able to do?**
- This standard asks students to understand that a set of (5) object can be broken into two sets (3 and 2) and still be the same total amount (5). The focus is on number pairs which add to a specified total, 1-10.
- In addition, this standard asks students to understand that a set of objects (5) can be broken in multiple ways (3 and 2; 4 and 1). Thus, when breaking apart a set (decomposing), students develop the understanding that a smaller set of objects exists within that larger set (inclusion). This should be developed in context before moving into how to represent decomposition with symbols (+, -, =).
  - Example: “Bobby Bear is missing 5 buttons on his jacket. How many ways can you use blue and red buttons to finish his jacket? Draw a picture of all your ideas. Students could draw pictures of: 4 blue and 1 red button 3 blue and 2 red buttons 2 blue and 3 red buttons 1 blue and 4 red buttons.
  - Students may also use drawings to show different number pairs for a given number. For example, students may draw 5 objects, showing how to decompose in several ways.

**What Mastery Looks Like:**
Students understand that, for a given number, there are multiple ways to write the number as a sum of two numbers. Students can record these sums in different ways, including pictures and equations.

<table>
<thead>
<tr>
<th>x x x 5 objects</th>
</tr>
</thead>
<tbody>
<tr>
<td>x x x 5 = 2 + 3</td>
</tr>
<tr>
<td>x x x 5 = 4 + 1</td>
</tr>
</tbody>
</table>

*Based on a work at www.engageny.org, www.smarterbalanced.org and the CCSS Progression Documents*
**K.OA.4** For any number from 1 to 9, find the number that makes 10 when added to the given number, e.g., by using objects or drawings, and record the answer with a drawing or equation.

**What do students need to know and be able to do?**
This standard builds upon the understanding that a number can be decomposed into parts (K.OA.3). The number pairs that total ten are foundational for students’ ability to work fluently within numbers and operations. Different models, such as ten-frames, cubes, two-color counters, etc., assist students in visualizing these number pairs for ten. Once students have had experiences breaking apart ten into various combinations, this asks students to find a missing part of 10.

**What Mastery Looks Like:**

**Example 1:**
“A full case of juice boxes has 10 boxes. There are only 6 boxes in this case. How many juice boxes are missing?

- **Student 1**
  Using a Ten Frame
  “I used 6 counters for the 6 boxes of juice still in the case. There are 4 blank spaces so 4 boxes have been removed. This makes sense since 6 and 4 more equal 10.”

- **Student 2**
  Think addition.
  “I counted out 10 cubes because I knew there needed to be ten. I pushed these 6 over here because they were in the container. These are left over. So there’s 4 missing.”

- **Student 3**
  Basic Fact.
  “I know that it’s 4 because 6 and 4 is the same amount as 10.”

The student tosses ten two-color counters on the table and records how many of each color are facing up.

**K.NBT.1** Compose and decompose numbers from 11 to 19 into ten ones and some further ones, e.g., by using objects or drawings, and record each composition or decomposition by a drawing or equation (e.g., 18 = 10 + 8); understand that these numbers are composed of ten ones and one, two, three, four, five, six, seven, eight, or nine ones.

This is the first time that students move beyond the number 10 with representations, such as objects (manipulatives) or drawings.
- The spirit of this standard is that students separate out a set of 11-19 objects into a group of ten objects with leftovers.
- This ability is a pre-cursor to later grades when they need to understand a more complex concept that a group of 10 objects is also one ten (unitizing).
- Ample experiences with ten frames will help solidify this concept.
- Research states that students are not ready to unitize until the end of first grade. Therefore, this work in Kindergarten lays the foundation of composing tens and recognizing leftovers.

**Example:**
- **Teacher:** “Please count out 15 chips.”
- **Student:** “Student counts 15 counters (chips or cubes).”
- **Teacher:** “Do you think there is enough to make a group of ten chips? Do you think there might be some chips leftover?”
- **Student:** “Student answers.”
- **Teacher:** “Use your counters to find out.”
- **Student:** “Student can either fill a ten frame or make a stack of ten connecting cubes. They answer, “There is enough to make a group of ten.”

- **Teacher:** “How many leftovers do you have?”
- **Student:** “Students say, “I have 5 left over.”
- **Teacher:** “How could we use words and/or numbers to show this?”
- **Student:** “Students might say “Ten and five is the same amount as 15,” “15 = 10 + 5”

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Special attention needs to be paid to this set of numbers as they do not follow a consistent pattern in the verbal counting sequence.

- Eleven and twelve are special number words.
- “Teen” means one “ten” plus ones.
- The verbal counting sequence for teen numbers is backwards - we say the ones digit before the tens digit. For example “27” reads tens to ones (twenty-seven), but 17 reads ones to tens (seven-teen).
- In order for students to interpret the meaning of written teen numbers, they should read the number as well as describe the quantity. For example, for 15, the students should read “fifteen” and state that it is one group of ten and five ones and record that 15 = 10 + 5.

Teaching the teen numbers as one group of ten and extra ones is foundational to understanding both the concept and the symbol that represent each teen number. For example, when focusing on the number “14,” students should count out fourteen objects using one-to-one correspondence and then use those objects to make one group of ten ones and four additional ones.

1.OA.5 Relate counting to addition and subtraction (e.g., by counting on 2 to add 2).

This standard asks for students to make a connection between counting and adding and subtraction. Students use various counting strategies, including counting all and counting on with numbers up to 20. This standard calls for students to move beyond counting all and become comfortable at counting on. The counting all strategy requires students to count an entire set. The counting and counting back strategies occur when students are able to hold the “start number” in their head and count on from that number.

Students’ multiple experiences with counting may hinder their understanding of counting on as connected to addition and subtraction. To help them make these connections when students count on 3 from 4, they should write this as 4 + 3 = 7. When students count on for subtraction (3) from 7, they should connect this to 7 − 3 = 4. Students write 7 − 3 =? and think I count on 3+? = 7.

Note: Many children attempt to count down for subtraction, but counting down is difficult and error-prone. Children are much more successful when counting; it makes subtraction as easy as addition. The use of “touch points or touch math” should be avoided since it encourages students to stay at Level 1.

Common Misconceptions:

Students ignore the need for regrouping when subtracting with numbers 0 to 20 and think that they should always subtract a smaller number from a larger number. For example, students solve 15 − 7 by subtracting 5 from 7 and 0 (0 tens) from 1 to get 12 as the incorrect answer. Students need to relate their understanding of place-value concepts and grouping in tens and ones to their steps for subtraction. They need to show these relationships for each step using mathematical drawings, ten-frames or
base-ten blocks so they can understand an efficient strategy for multi-digit subtraction.

1.OA.6 Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as 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 \( 12 - 8 = 4 \)); and creating equivalent but easier or known sums (e.g., adding \( 6 + 7 \) by creating the known equivalent \( 6 + 6 + 1 = 12 + 1 = 13 \)).

This standard is strongly connected to all the standards in this domain. It focuses on students being able to fluently add and subtract numbers to 10 and having experiences adding and subtracting within 20.

By studying patterns and relationships in addition facts and relating addition and subtraction, students build a foundation for fluency with addition and subtraction facts. Adding and subtracting fluently refers to knowledge of procedures, knowledge of when and how to use them appropriately, and skill in performing them flexibly (use of different strategies), accurately, and efficiently.

Algebraic ideas underlie what students are doing when they create equivalent expressions in order to solve a problem or when they use addition combinations they know to solve more difficult problems. Students begin to consider the relationship between the parts. For example, students notice that the whole remains the same, as one part increases the other part decreases. \( 5 + 2 = 4 + 3 \)

1.NBT.2 Understand that the two digits of a two-digit number represent amounts of tens and ones. Understand the following as special cases:

a. 10 can be thought of as a bundle of ten ones—called a “ten.”

b. The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones.

It is essential at this grade for students to see and use multiple representations of making tens using base-ten blocks, bundles of tens and ones, and ten-frames. Making the connections among the representations, the numerals and the words are very important. Students need to connect these different representations for the numbers 0 to 99.

Example of mastery:

4. Mark says that 87 is the same as 7 tens 17 ones. Suki says that 87 is the same as 8 tens 7 ones. Are they correct? Explain your thinking in writing or words.

Students need to move through a progression of representations to learn a concept. They start with a Concrete model, move to a pictorial or Representational model, then an Abstract model (CRA).
1.NBT.4  Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, 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 and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten.

Students should use and connect different representations when they solve a problem. They should start by building a concrete model to represent a problem. This will help them form a mental picture of the model. Now students move to using pictures and drawings to represent and solve the problem. If students skip the first step, building the concrete model, they might use finger counting to solve the problem. Finger counting is an inefficient strategy for adding within 100 and subtracting within multiples of 10 between 10 and 90.

Common Misconceptions
Students have alternate concepts of multi-digit numbers and see them as numbers independent of place value. When counting or adding numbers, student read the number 32 as “thirty-two” and count out 32 objects to demonstrate the value of the number, but when asked to write the number in expanded form, they write “3+2”. Or when asked the value of the digits in the number they respond that the values are “3” and “2”.

Example of Mastery:

1. Solve. (DOK 1) 2. Solve. (DOK 1)

   \[ 64 + 20 = \quad 53 + 8 = \]

1.NBT.5  Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used.

1.NBT.5 builds on students’ work with tens and ones and requires them to understand and apply the concept of 10 by mentally adding ten more and ten less than any number less than 100. This understanding leads to future place value concepts. It is critical for students to do this without counting. Prior use of models such as base ten concepts, number lines, and 100 charts helps facilitate understanding. Ample experiences with ten frames will also help students see the pattern involved when adding or subtracting 10 and USE these patterns to solve such problems.

Example:
There are 74 birds in the park. 10 birds fly away. How many are left?
Student 1: I used a 100s board. I started at 74. Then, because 10 birds flew away. I moved back one row. I landed on 64. So, there are 64 birds left in the park.
Student 2: I pictured 7 ten frames and 4 left over in my head. Since 10 birds flew away. I took one of the ten frames away. That left 6 ten frames and 4 left over. So, there are 64 birds left in the park.

Common Misconceptions:

- More Examples: 10 more than 43 is 53 because 53 is one more 10 than 43
- 10 less than 43 is 33 because 33 is one 10 less than 43

Example of Mastery:
Students lack the concept that 10 in any position (place) makes one (group) and in the next position and vice-versa.

Example:
If students are asked to add a collection of 12 hundreds, 2 tens and 13 ones, students write 12213,
Mastery example: possibly squeezing the 2 and the 13 together or separating the three numbers with some space.

1.NBT.6 Subtract multiples of 10 from multiples of 10 (positive or zero differences), using concrete models or drawings and strategies based on place value, properties of operations, and/or relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.

1.NBT.6 calls for students to use concrete models, drawings and place value strategies to subtract multiples of 10 from decade numbers (e.g., 30, 40, 50). This standard is foundational for future work in subtraction with more complex numbers. Students should have multiple experiences representing numbers that are multiples of 10 (e.g. 90) with models or drawings. Then they subtract multiples of 10 (e.g. 20) using these representations or strategies based on place value. These opportunities develop fluency of addition and subtraction facts and reinforce counting up and back by 10s.

Examples:
- 70 - 30: Seven 10s take away three 10s is four 10s
- 80 - 50: 80, 70 (one 10), 60 (two 10s), 50 (three 10s), 40 (four 10s), 30 (five 10s)
- 60 - 40: I know that 4 + 2 is 6 so four 10s + two 10s is six 10s so 60 - 40 is 20

Example:
There are 60 students in the gym. 30 students leave. How many students are still in the gym?

Student 1
I used a hundreds chart and started at 60. I moved up 3 rows to land on 30. There are 30 students left.

Student 2
I used place value blocks or Unifix cubes to build towers of 10. I started with 6 towered of 10 and removed 3. Had 3 towers left. 3 towers have a value of 30. There are 30 students left.

Student 3
Students mentally apply their knowledge of addition to solve this subtraction problem. I know that 30 plus 30 is 60, so 60 minus 30 equals 30. There are 30 students left.

Student 4
I used a number line. I started at 60 and moved back 3 jumps of 10 and landed on 30. There are 30 students left.

Students may use interactive versions of models to demonstrate and justify their thinking.

Terminology
New or Recently Introduced Terms
- Make a ten (compose a unit of ten, e.g., \(49 + 3 = 40 + 10 + 2\))

Familiar Terms and Symbols
- Addend (one of the numbers being added)
- A ten (a place value unit composed of 10 ones)
- Count on (count up from one addend to the total)
- Expression (e.g., \(2 + 1, 13 - 6\))
- Like units (e.g., frogs and frogs, ones and ones, tens and tens)
- Make ten and take from ten (e.g., \(8 + 3 = 8 + 2 + 1\) and \(15 - 7 = 10 - 7 + 5 = 3 + 5\))
- Number sentence (e.g., \(2 + 3 = 5, 7 = 9 - 2, 10 + 2 = 9 + 3\))
- Number bond (see image to the right)
- One (a place value unit, 10 of which may be composed to make a ten)
- Partners to 10 (e.g., 10 and 0, 9 and 1, 8 and 2, 7 and 3, 6 and 4, 5 and 5)
- Say Ten counting (see the chart to the right)
- Ten plus facts (e.g., \(10 + 3 = 13, 10 + 5 = 15, 10 + 8 = 18\))
- Part (e.g., “What is the unknown part? \(3 + \_ = 8\)"
- Total (e.g., for \(3 + 4 = 7\) or \(7 - 4 = 3\), seven is the whole, or total)

Module 1 Standards

<table>
<thead>
<tr>
<th>Major standards (areas of intensive focus) - underlined and bolded</th>
<th>Supporting standards - (supports the major standards and is taught with major standards) - bolded</th>
<th>Additional standards-(doesn’t connect to major work but is important to the progressions) italics.</th>
</tr>
</thead>
</table>

Examples of Standard
What do students need to know and be able to do? What does mastery of standard look like?

\[\text{Number Bond}\]

<table>
<thead>
<tr>
<th>Regular</th>
<th>Say Ten</th>
</tr>
</thead>
<tbody>
<tr>
<td>fifty-one</td>
<td>5 tens 1</td>
</tr>
<tr>
<td>sixty-seven</td>
<td>6 tens 7</td>
</tr>
<tr>
<td>seventy-five</td>
<td>7 tens 5</td>
</tr>
<tr>
<td>eighty-four</td>
<td>8 tens 4</td>
</tr>
<tr>
<td>ninety-five</td>
<td>9 tens 5</td>
</tr>
</tbody>
</table>

\[^3\text{These are terms and symbols students have used or seen previously.}\]
Represent and solve problems involving addition and subtraction.²

2.0A.1 Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem. (See CCLS Glossary, Table 1.)

This standard will be taught again in Module 4.

Students need to know:
- Extension of 1st grade, addition and subtraction up to 100
- Solving for unknown and finding what is missing
- One and two steps word problems
- Unknown in all positions: Adding to, taking from, putting together, taking apart, comparing
- Visualization

Mastery looks like:
- Solve both steps in word problems adding and subtracting from whatever position
- Solving and explaining thinking
- RDW steps in problem solving

Add and subtract within 20.³

2.0A.2 Fluently add and subtract within 20 using mental strategies. (See standard 1.OA.6 for a list of mental strategies.)

By end of Grade 2, know from memory all sums of two one-digit numbers.

This standard is only taught in Module 1.

This standard mentions the word fluently when students are adding and subtracting numbers within 20. Fluency means accuracy (correct answer), efficiency (within 4-5 seconds), and flexibility (using strategies, such as making 10 or breaking apart numbers).

Please note: This list is not an all-inclusive list of strategies! Do not limit your students to just these strategies!

Second Graders internalize facts and develop fluency by repeatedly using strategies that make sense to them. When students are able to demonstrate fluency they are accurate, efficient, and flexible. Students must have efficient strategies in order to know sums from memory.

- Research indicates that teachers’ can best support students’ memorization of sums and differences through varied experiences such as, making 10, breaking numbers apart and working on mental strategies.

² In this module, word problems focus primarily on result unknown and change unknown situations.

³ From this point forward, fluency practice with addition and subtraction to 20 is part of the students’ ongoing experience.

Greeley-Evans School District 6 Updated 6-6-16

2nd Grade

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These strategies replace the use of repetitive timed tests in which students try to memorize operations as if there were not any relationships among the various facts. When teachers teach facts for automaticity, rather than memorization, they encourage students to THINK about the relationships among the facts. (Fostnot & Dolk, 2001)

It is no accident that the standard says “know from memory” rather than “memorize”. The first describes an outcome, whereas the second might be seen as describing a method of achieving that outcome. So no, the standards are not dictating timed tests. (McCallum, 2011)

Use place value understanding and properties of operations to add and subtract.¹

2.NBT.9 Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.

This standard will be taught again in Module 4.

Student need to know:
- Extension of NBT 4, adding and subtraction within 100
- Using place value strategy
- Relationship between addition and subtraction
- Various models/tools (base ten blocks, tape diagrams, number bonds, place value disks)

Mastery looks like:
- Effective strategy for addition or subtraction within 100
- Correct answer (fluent)

Content Suggestions

The “must do” lessons were selected due to the math concept taught in the lesson, based on the EngageNY objective. Within these lessons, the objective is scaffolded from the fluency activities into the concept development and then practiced in the problem set. However, the “must do” lessons may not be perfect for you students. So, as you look at these “must do” lessons, customize the lessons around the math concept and your students. The “may do” lessons may be ways to reteach or extend the math concepts for your students. Don’t assume that they are an omit lesson. Use your understanding of the math concepts and your knowledge of what your students need to make the decision to use or omit the lesson.

Standards

<table>
<thead>
<tr>
<th>Standards</th>
<th>Topic and Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.OA.2</td>
<td>A Foundations for fluency with sums and differences within a 100.</td>
</tr>
<tr>
<td>K.OA.3</td>
<td>Lesson 1: Practice making ten and adding to ten. (MP.8)</td>
</tr>
<tr>
<td>K.OA.4</td>
<td>Lesson 2: Practice making the next ten and adding to a multiple of ten.</td>
</tr>
<tr>
<td>K.NBT.1</td>
<td></td>
</tr>
<tr>
<td>1.NBT.2b</td>
<td></td>
</tr>
<tr>
<td>1.OA.5</td>
<td></td>
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<tr>
<td>1.OA.6</td>
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</tbody>
</table>

By the end of Topic A, your students should be able to:
- Make tens and add to ten.

Key:
- “Must do” Lessons (Focuses on the standard in depth)
- “May do” Lessons (Based on student needs)

¹ The balance of this cluster is addressed in Modules 4 and 5.

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### Supporting Resources

<table>
<thead>
<tr>
<th>Foundational standards to support pre-requisite needs</th>
<th>Suggested Stations/Lessons/Games</th>
<th>Suggested Number Talks</th>
</tr>
</thead>
</table>
| **K.OA.3** Decompose numbers less than or equal to 10 into pairs in more than one way, e.g., by using objects or drawings, and record each decomposition by a drawing or equation (e.g., 5 = 2 + 3 and 5 = 4 + 1). | Developing Number Concepts Stations:  
- Book 2, 1-12 Counting Boards  
- Book 2, 1-14 Plus and Minus Train  
- Book 2, 1-15 Clear the Desk  
- Book 2, 1-17 Writing Stories to Match Equations  
- Book 2, 3-21 Grab Bag Addition Station  
- Book 2, 2-14 through 2-21 Number Arrangements | Join the Kindergarten Schoology Group  
Access Code: TWHMB-CR75X  
Look at the Module 4 folder for number talks ideas. These are meant to be a start for you, but please consider the students in your classroom and adapt and adjust these number talks to meet their needs.  
Ten Frame Flash |
| **K.OA.4** For any number from 1 to 9, find the number that makes 10 when added to the given number, e.g., by using objects or drawings, and record the answer with a drawing or equation. | Developing Number Concepts Stations:  
- See above  
Problem Solving Tasks:  
- Got Your Number Primary Level  
- Books on Shelves | How many more to make 10?  
Friends of 10  
Ten and some more |
<table>
<thead>
<tr>
<th>Standard</th>
<th>Description</th>
<th>Tasks</th>
</tr>
</thead>
</table>
| K.NBT.1  | Compose and decompose numbers from 11 to 19 into ten ones and some further ones, e.g., by using objects or drawings, and record each composition or decomposition by a drawing or equation (e.g., 18 = 10 + 8); understand that these numbers are composed of ten ones and one, two, three, four, five, six, seven, eight, or nine ones. | Developing Number Concepts Stations:  
- 3-30 Working with Ten Shapes - only “Ten Plus a Number”  
- 3-33 Number Shape Pairs  
- 3-34 Two Ten Shapes Addition and Subtraction (Consider using 10 frame plus a different number shape card to practice 10 + a number)  
Problem Solving Tasks:  
- **Peas in a Pod**  
- **Counting Squares**  
- **Composing and Decomposing 11-19** (pg. 9) |
| 1.OA.5   | Relate counting to addition and subtraction (e.g., by counting on 2 to add 2). | Max and Ruby: This task involves addition and subtraction standards through 20. Maybe adjusted to meet student needs or used prior to Module 1 as an overall assessment in student skills.  
Digging Dinosaurs Level A: This task encourages students to explore problem solving using multiple solutions to determine how many dinosaurs in the water.  
Developing Number Concepts Book 2:  
- 1-3 Acting out Stories: Using Counters  
- 1-13 Race to 10  
- 1-15 Clear the Deck |
| 1.OA.6   | Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as 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 12 - 8 = 4); and creating equivalent but easier or known sums (e.g., adding 6 + 7 by creating the known equivalent 6 + 6 + 1 = 12 + 1 = 13). | All Aboard the Train for OA1, 2, 3, 6, and 8  
Max and Ruby: This task involves addition and subtraction standards through 20. Maybe adjusted to meet student needs or used prior to Module 1 as an overall assessment in student skills.  
Digging Dinosaurs Level A: This task encourages students to explore problem solving using multiple solutions to determine how many dinosaurs in the water.  
Developing Number Concepts Book 2 |

---

2nd Grade

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<table>
<thead>
<tr>
<th>1.NBT.2</th>
<th>Understand that the two digits of a two-digit number represent amounts of tens and ones. Understand the following as special cases:</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. 10 can be thought of as a bundle of ten ones—called a “ten.”</td>
<td>Developing Number Concepts Book 2</td>
</tr>
<tr>
<td>b. The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones.</td>
<td></td>
</tr>
</tbody>
</table>

### 1.NBT.2 Examples
- **2-18 Counting Boards: Making Up Number Combinations Stories**
- **2-2 The Tub Game**
- **2-3 The Wall Game**
- **2-4 Bulldozer**
- **2-1 Snap It**
- **2-6 The Cave Game**
- **2-19 Number Shape Arrangements**
- **2-18 Counting Boards**

### 1.NBT.4 Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, 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 and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten.

- **3-30 Working with Ten-Shapes (Addition and Subtraction)**
- **3-31 A Ten Shape and More: Subtraction**
- **3-34 Two Ten Shapes: Addition Station**
- **3-35 A Ten Shape and More: Addition Station**
- **3-37 Wipe Out**

### 1.NBT.4 Examples
- **Learn Zillion Videos and Lessons:**
  - **1.NBT.4**

### Small Group Stations:
- **Sums of 90**
- **Subtract 10 on the Number Line**
- **Lucky Six**
- **Adding a Multiple of 10 ver.1**

### 1.NBT.5 Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used.

- **10 more**
- **Race Around (-10)**

### Small Group Stations:
- **10 more**
- **Race Around (-10)**

---

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2nd Grade

Modified from Pacing Guides by FWPS which are licensed under a Creative Commons Attribution-NonCommercial 4.0 International License.
<table>
<thead>
<tr>
<th>Module 1 Standards</th>
<th>Suggested Stations/Lessons/Games</th>
<th>Suggested Number Talks</th>
</tr>
</thead>
</table>
| Represent and solve problems involving addition and subtraction.\(^5\) | Stations:  
- Chapter 3 of John Van de Walle, *Teaching Student Centered Mathematics*  
- *Incredible Equations*  
- *Sheep and Ducks 1-4*  
- *Got Your Number Level A*  
- *Party Time Level A*  
- *Squirreling it Away Level A*  
- *Measuring Up Level A*  
- *Miles of Tiles Level A*  

Problem Solving Task: (Could be used for collaboration stations)  
- *Incredible Equations*  
- *Sheep and Ducks 1-4*  
- *Got Your Number Level A*  |

8 + 6 = 18 + 6 = 16 - 9 = 26 - 9 = |

Add and subtract within 20.\(^6\) | Stations:  
- Chapter 2 of John Van de Walle, *Teaching Student Centered Mathematics*  
- *Incredible Equations*  
- *Got Your Number Level A*  |

Problem Solving Tasks:  
- *Incredible Equations*  
- *Got Your Number Level A*  |

Use place value understanding and properties of operations to add and subtract.\(^7\) | Problem Solving Tasks:  
- *Incredible Equations*  
- *Sheep and Ducks 1-4*  |

Small Group Stations:  
- *Keep on Doubling*  
- *2-Digit Addition Split*  |

---

\(^5\) In this module, word problems focus primarily on result unknown and change unknown situations.

\(^6\) From this point forward, fluency practice with addition and subtraction to 20 is part of the students’ ongoing experience.

\(^7\) The balance of this cluster is addressed in Modules 4 and 5.
Suggested Tools and Representations:
*These are recommendations from ENY Module Overview

- 100-bead Rekenrek
- 5-group column
- Dice
- Hide Zero cards (Lesson 2 Template 1)
- Linking cubes
- Number bond
- Personal white boards
- Place value chart
- Quick ten (vertical line representing a unit of ten)
- Ten-frame cards (Lesson 1 Fluency Template 1)

---

2nd Grade Module 2 Knowledge Packet
Addition and Subtraction of Length Units

Module Window: September 6 - September 22nd

<table>
<thead>
<tr>
<th>Foundational standards to support pre-requisite needs</th>
<th>Examples of Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.MD.1 Order three objects by length; compare the lengths of two objects indirectly by using a third object.</td>
<td>1.MD.1 calls for students to indirectly measure objects by comparing the length of two objects by using a third object as a measuring tool. This concept is referred to as transitivity. Example: Mastery of Standard:</td>
</tr>
</tbody>
</table>

---

Greeley-Evans School District 6 Updated 6-6-16

2nd Grade

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Which is longer: the height of the bookshelf or the height of a desk?

In order for students to be able to compare objects, students need to understand that length is measured from one end point to another end point. They determine which of two objects is longer, by physically aligning the objects. Typical language of length includes taller, shorter, longer, and higher. When students use bigger or smaller as a comparison, they should explain what they mean by the word. Some objects may have more than one measurement of length, so students identify the length they are measuring. Both the length and the width of an object are measurements of length.

Examples for ordering:
- Order three students by their height
- Order pencils, crayons, and/or markers by length
- Build three towers (with cubes) and order them from shortest to tallest
- Three students each draw one line, then order the lines from longest to shortest
- Two students each make a dough “snake.” Given a tower of cubes, each student compares his/her snake to the tower. Then students make statements such as, “My snake is longer than the cube tower and your snake is shorter than the cube tower. So, my snake is longer than your snake.”

Students need to understand what a unit of measure is and how it is used to find a measurement. They need to predict the measurement, find the measurement and then discuss the estimates, errors and the measuring process. Experiences with informal or nonstandard units promote the need for measuring with standard units.

Measurement units share the attribute being measured. Students need to use as many copies of the length unit as necessary to match the length being measured. Students need to also measure the lengths of curves and other distances that are not straight lines.

Common Misconceptions: Some students may view the measurement process as a procedural counting task. They might count the markings on a ruler rather than the spaces between (the unit of measure). Students need numerous experiences measuring lengths with student-made tapes or rulers with numbers in the center of the spaces.
1.MD.2 Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; 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 to contexts where the object being measured is spanned by a whole number of length units with no gaps or overlaps.

1.MD.2 asks students to use multiple copies of one object to measure a larger object. This concept is referred to as iteration. Through numerous experiences and careful questioning by the teacher, students will recognize the importance of making sure that there are not any gaps or overlaps in order to get an accurate measurement. This concept is a foundational building block for the concept of area in 3rd Grade.

Example: How long is the paper in terms of paper clips?

Students use their counting skills while measuring with non-standard units. While this standard limits measurement to whole numbers of length, in a natural environment, not all objects will measure to an exact whole unit. When students determine that the length of a pencil is six to seven paperclips long, they can state that it is about six paperclips long.

Example:

- Ask students to use multiple units of the same object to measure the length of a pencil. (How many paper clips will it take to measure how long the pencil is?)

Mastery of Standard:

**Terminology**
New or Recently Introduced Terms
- Benchmark (e.g., “round” numbers like multiples of 10)
- Endpoint (point where something begins or ends)
- Estimate (an approximation of a quantity or number)
- Hash mark (marks on a ruler or other measurement tool)
- Meter (standard unit of length in the metric system)
- Meter stick or strip (tool used to measure length)
- Number line
- Overlap (extend over, or cover partly)
- Ruler (tool used to measure length)

Familiar Terms and Symbols
- Centimeter (standard length unit within the metric system)
- Combine (join or put together)
- Compare (specifically using direct comparison)
- Difference (to find the difference between two numbers, subtract the smaller number from the greater number)
- Height (vertical distance measurement from bottom to top)
- Length (distance measurement from end to end; in a rectangular shape, length can be used to describe any of the four sides)
- Length unit (e.g., centimeters, inches)

Module 2 Standards

| Major standards (areas of intensive focus) - underlined and bolded |
| Supporting standards - (supports the major standards and is taught with major standards) - bolded |
| Additional standards - (doesn’t connect to major work but is important to the progressions) Italic |

District 6 Priority Standards are highlighted

Examples of Standard
What do students need to know and be able to do? What does mastery of standard look like?

---

These are terms and symbols students have used or seen previously.

Greeley-Evans School District 6 Updated 6-6-16

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Measure and estimate lengths in standard units.⁹

<table>
<thead>
<tr>
<th>2.MD.1</th>
<th>Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>This standard will be taught again in Module 7.</td>
</tr>
</tbody>
</table>

This standard calls for students to measure the length of objects in both customary (inches and feet) and metric (centimeters and meters). Students should have ample experiences choosing objects, identifying the appropriate tool and unit, and then measuring the object. The teacher should allow students to determine which tools and units to use.

Foundational understandings to help with measure concepts:
- Understand that larger units can be subdivided into equivalent smaller units (partition).
- Understand that the same unit can be repeated to determine the measure (iteration).
- Understand the relationship between the size of a unit and the number of units needed (compensatory principal).
- Understand measuring two-dimensional space (area) using non-standard units. Students in second grade will build upon what they learned in first grade from measuring length with non-standard units to the new skill of measuring length in metric and U.S. Customary with standard units of measure.

Ask students questions such as: “Do you start at the end of the ruler or at the zero?” helps them focus on where to start on the instrument. They ask them: “Why do we have to start at the zero?” and “Are we looking at the spaces or the tic marks on the rulers?”

Common Misconceptions:
Some students might think that they can only measure lengths with a ruler starting at the left edge. Provide situations where the ruler does not start at zero. For example, a ruler is broken and the first inch number that can be seen is 2. If a pencil is measured and it is 9 inches on this ruler, the students must subtract 2 inches from the 9 inches to adjust for where the measurement started. Some student become confused when the ruler they are using have both customary and metric measures on it. By covering on scale with masking tape the student becomes less confused.

<table>
<thead>
<tr>
<th>2.MD.2</th>
<th>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.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>This standard will be taught again in Module 7.</td>
</tr>
</tbody>
</table>

This standard calls for students to measure an object using two units of different lengths. Concentrate on the “spaces” for the units and not the marks on the rulers.

Example of mastery:

A student measures the length of their desk and finds that it is 3 feet and 36 inches.

Examples:
- Students measure the length of the same object using different tools (ruler with inches, ruler with centimeters, a yardstick, or meter stick). This will help students learn which tool is more appropriate for measuring a given object.
- They describe the relationship between the size of the measurement unit and the number of units needed to measure something. For instance, a student might say, “The longer the unit, the fewer I need.”

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⁹Focus is on metric measurement in preparation for place value in Module 3. Customary measurement is addressed in Module 7.

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2.MD.3 Estimate lengths using units of inches, feet, centimeters, and meters.
This standard will be taught again in Module 7.

Example of mastery:

This standard calls for students to estimate the lengths of objects using inches, feet, centimeters, and meters. Students should make estimates after seeing a benchmark unit, such as the length of one inch, before making their estimate.

Example:
- Students need to figure out visual benchmarks on their bodies that help them identify about an inch, foot, cm, etc.

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.
This standard will be taught again in Module 7.

Example of Mastery:

This standard calls for students to determine the difference in length between two objects. Students should choose objects, identify appropriate tools and units, measure both objects, and then determine the differences in lengths using the same unit of measure.

Students should use comparative phrases such as “It is longer by 2 inches” or “It is shorter by 5 centimeters” to describe the difference between two objects.

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.
This standard will be taught again in Module 7.

Example:

In P.E. class Kate jumped 14 inches. Mary jumped 23 inches. How much farther did Mary jump than Kate? Write an equation and then solve the problem.

Common Misconceptions: Help students develop and understanding of what the problem is asking. Sometimes “key words” can be misleading. The teaching of a “key word approach” limits the development of understanding what the problems is actually asking.

Example of Mastery:

5. Draw a picture and write a number sentence to solve.
- The height of the dog’s doorway is 19 inches. The height of the family’s doorway is 78 inches. How much taller is the family’s doorway than the dog’s doorway?
This standard calls for the student to create number lines within 100 to solve addition and subtraction problems. Students should create the number line with evenly spaced points corresponding to the numbers. Students represent their thinking when adding and subtracting within 100 by using a number line. Their thinking should connect to strategies that expand beyond one by one counting.

**Examples:**

\[ 10 - 6 = 4 \]

\[ 10 + 10 + 5 = 25 \]

\[ 75 - 40 = 35 \]

Content Suggestions

The “must do” lessons were selected due to the math concept taught in the lesson, based on the EngageNY objective. Within these lessons, the objective is scaffolded from the fluency activities into the concept development and then practiced in the problem set. However, the “must do” lessons may not be perfect for your students. So, as you look at these “must do” lessons, customize the lessons around the math concept and your students. The “may do” lessons may be ways to reteach or extend the math concepts for your students. Don’t assume that they are an omit lesson. Use your understanding of the math concepts and your knowledge of what your students need to make the decision to use or omit the lesson.

**Standards**

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.

This standard will be taught again in Module 7.

**Topic and Objectives**

**2.MD.1**: Understand Concepts About the Ruler

- **Lesson 1**: Connect measurement with physical units by using multiple copies of the same physical unit to measure. (MP.3)
- **Lesson 2**: Use iteration with one physical unit to measure. (MP.6)
- **Lesson 3**: Apply concepts to create unit rulers and measure lengths using unit rulers. (MP.6)

**Days: 2**

Consolidate lessons 2 and 3 if needed for pacing.

Key:

- “Must do” Lessons (Focuses on the standard in depth)
- “May do” Lessons (Based on student needs)
By the end of Topic A, your students should be able to:

- Using centimeter cubes to measure a variety of objects.
- Use iteration with one centimeter cube to measure.
- Attend to precision (no gaps or overlaps in measurement).

**Snapshot Assessment 2.MD.1 Problems 1-4.**

<table>
<thead>
<tr>
<th>2.MD.1</th>
<th>B</th>
<th>Measure and Estimate Length Using Different Measurement Tools</th>
<th>Day: 1</th>
<th>Consolidate Lessons 4 and 5.</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.MD.3</td>
<td></td>
<td>Lesson 4: Measure various objects using centimeter rulers and meter sticks. (MP.5)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lesson 5: Develop estimation strategies by applying prior knowledge of length and using mental benchmarks. (MP.2)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

By the end of Topic B, your students should be able to:

- Measure objects using centimeters and meters.
- Have a mental benchmark of a meter and centimeter to help them estimate.

**Snapshot Assessment 2.MD.3 Problems 1-4.**

<table>
<thead>
<tr>
<th>2.MD.1</th>
<th>C</th>
<th>Measure and Compare Lengths Using Different Length Units</th>
<th>Days: 1</th>
<th>Optional Lesson 7: Non-standard lengths is not a 2\textsuperscript{nd} grade standard. Could be replaced with Problem Solving Task Measuring Mammals Part A</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.MD.2</td>
<td></td>
<td>Lesson 6: Measure and compare lengths using centimeters and meters. (MP.2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.MD.4</td>
<td></td>
<td>Lesson 7: Measure and compare lengths using standard metric length units and non-standard lengths units; relate measurement to unit size. (MP.3)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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By the end of Topic C, your students should be able to:

- Compare lengths of two objects (apply to word problems).

**Snapshot Assessment 2.MD.2**

1. Measure the lines with cubes and centimeters. (DOK 1, 2 points)
   - Line 1 ____________________________
   - Line 2 ____________________________
   - Line 3 ____________________________

2. Explain why each line in Question 1 had more centimeters than cubes. (DOK 2)

3. Would it take more meters of more centimeters to measure the length of the playground? (DOK 2)

By the end of Topic C, your students should be able to:

- Compare lengths of two objects (apply to word problems).

**2.MD.2**

- **2.MD.5**
- **2.MD.6**
- **2.MD.1**
- **2.MD.3**
- **2.MD.4**

**Relate Addition and Subtraction to Length**

- **Lesson 8:** Solve addition and subtraction word problems using the ruler as a number line. (MP.2)
- **Lesson 9:** Concrete to abstract: measure lengths of string using measurement tools; represent length with tape diagrams to represent and compare the lengths. (MP.5)
- **Lesson 10:** Apply conceptual understanding of measurement by solving two-step word problems. (MP.3)

**Days:** 3

**Problem Solving Task:** to accompany Lesson 8: **Frog and Toad on the Number Line**

**Extension Lesson 9:** At this point in the year students can continue to use concrete models. Later in the year they can move to using abstract models.

By the end of Topic D, your students should be able to:

- See the ruler as a number line.
- Solve addition and subtraction word problems involving length.

**Snapshot Assessment 2.MD.6 Part A**

1. Write in the missing number. (DOK 1)

2. Which number is between 43 and 45? (DOK 1)

**2.MD.6**

**2.MD.4**

**2.MD.1**

**2.MD.3**

**2.MD.5**

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### Supporting Resources

<table>
<thead>
<tr>
<th>Foundational standards to support pre-requisite needs</th>
<th>Suggested Stations/Lessons/Games</th>
<th>Suggested Number Talks</th>
</tr>
</thead>
</table>
| **1.MD.1** Order three objects by length; compare the lengths of two objects indirectly by using a third object. | Consider doing these Tasks After Topic A:  
- **Measuring Mammals Primary Level, Level A** This task explores the comparisons between size, length, longer and shorter in mammals.  
- **Rod Trains Levels A, B, and C** This task helps students to use trains as a measurement of length. | Focus on 2nd grade standards. |
| **1.MD.2** Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no | Consider doing these Tasks After Topic A:  
- **Measuring Mammals Primary Level, Level A** This task explores the comparisons between size, length, longer and shorter in mammals.  
- **Rod Trains Levels A, B, and C** This task helps students to use trains as a measurement of length. | |
gaps or overlaps. Limit to contexts where the object being measured is spanned by a whole number of length units with no gaps or overlaps.

### Module 2 Standards

**Major standards (areas of intensive focus) - underlined and bolded**

**Supporting standards - (supports the major standards and is taught with major standards) - bolded**

**Additional standards-(doesn’t connect to major work but is important to the progressions) italics.**

District 6 Priority Standards are highlighted

<table>
<thead>
<tr>
<th>Measure and estimate lengths in standard units.</th>
<th>Suggested Stations/Lessons/Games</th>
<th>Suggested Number Talks</th>
</tr>
</thead>
</table>
| 2.MD.1 Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes. This standard will be taught again in Module 7. | Problem Solving Tasks:  
- Measuring Mammals Part A  
Various MD standards:  
Web Resources:  
- Broken ruler lesson | • Continue computational number talks. |
| 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. This standard will be taught again in Module 7. | Various MD standards:  
| 2.MD.3 Estimate lengths using units of inches, feet, centimeters, and meters. | Various MD standards:  

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3Focus is on metric measurement in preparation for place value in Module 3. Customary measurement is addressed in Module 7. Greeley-Evans School District 6 Updated 6-6-16  
2nd Grade  
(e) All  
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<table>
<thead>
<tr>
<th>Standard</th>
<th>Description</th>
<th>Web Resources</th>
<th>Problem Solving Tasks</th>
<th>Various MD standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.MD.4</td>
<td>Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit. This standard will be taught again in Module 7.</td>
<td><strong>Understanding Estimation</strong></td>
<td><strong>Measuring Mammals</strong> Part A</td>
<td><a href="http://mrnussbaum.com/second-grade-measurement-and-data">http://mrnussbaum.com/second-grade-measurement-and-data</a> and <a href="http://www.learnzillion.com/lesson_plans/29572">Learn Zillion: Multiple Object Length Comparison</a></td>
</tr>
<tr>
<td>2.MD.5</td>
<td>Relate addition and subtraction to length. 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. This standard will be taught again in Module 7.</td>
<td><strong>Cutting Ribbon</strong></td>
<td><a href="http://mrnussbaum.com/second-grade-measurement-and-data">http://mrnussbaum.com/second-grade-measurement-and-data</a></td>
<td></td>
</tr>
<tr>
<td>2.MD.6</td>
<td>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. This standard will be taught again in Module 7.</td>
<td><strong>Frog and Toad on the Number Line could accompany Lesson 8</strong></td>
<td><a href="http://mrnussbaum.com/second-grade-measurement-and-data">http://mrnussbaum.com/second-grade-measurement-and-data</a></td>
<td></td>
</tr>
</tbody>
</table>
2 Grade **Module 3** Knowledge Packet

**Place Value, Counting, and Comparison of Numbers to 1,000**

2016-2017  
Module Window: September 23rd - October 26th

<table>
<thead>
<tr>
<th>Foundational standards to support pre-requisite needs</th>
<th>Examples of Standard</th>
<th>What do students need to know and be able to do? What does mastery of standard look like?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1.NBT.2</strong> Understand that the two digits of a two-digit number represent amounts of tens and ones. Understand the following as special cases:</td>
<td></td>
<td>It is essential at this grade for students to see and use multiple representations of making tens using base-ten blocks, bundles of tens and ones, and ten-frames. Making the connections among the representations, the numerals and the words are very important. Students need to connect these different representations for the numbers 0 to 99.</td>
</tr>
<tr>
<td>a. 10 can be thought of as a bundle of ten ones—called a “ten.”</td>
<td></td>
<td>· Groups of ones (single objects)</td>
</tr>
<tr>
<td>b. The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones.</td>
<td></td>
<td>· Groups of 2 tens and 3 ones (2 ten-rods &amp; 3 singles)</td>
</tr>
<tr>
<td>c. The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90, 100</td>
<td></td>
<td>Example of mastery:</td>
</tr>
</tbody>
</table>

*Suggested Tools and Representations:*
- Centimeter cubes
- Centimeter rulers
- Large and small paper clips
- Meter sticks
- Paper meter strips (Lesson 6 Template)
- Personal white boards
- Tape diagram

*These are recommendations from ENY Module Overview*
60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens (and 0 ones).

| Place Value Table, | Write the Number, | Read and Say the Number. Students need to move through a progression of representations to learn a concept. They start with a Concrete model, move to a pictorial or Representational model, then an Abstract model (CRA). |

| 1.NBT.3 Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols >, =, and <. |

| 4. Mark says that 87 is the same as 7 tens 17 ones. Suki says that 87 is the same as 8 tens 7 ones. Are they correct? Explain your thinking in writing or words. |

| 5. Use <, =, or > to compare the pairs of numbers. |

- a. 6 tens ○ 42 ones 
- b. 69 ○ 75 
- c. 75 ○ 6 tens 15 ones 
- d. 8 tens 14 ones ○ 7 tens 4 ones 

Making the connections among the representations, the numerals and the words are very important. Students need to connect these different representations for the numbers 0 to 99.

23 Twenty-three

Students need to move through a progression of representations to learn a concept. They start with a concrete model, move to a pictorial or representational model, then an abstract model.
### Terminology

#### New or Recently Introduced Terms
- Base ten numerals (e.g., a thousand is 10 hundreds, a hundred is 10 tens, starting in Grade 3 a one is 10 tenths, etc.)
- Expanded form (e.g., 500 + 70 + 6)
- Hundreds place (e.g., the 5 in 576 is in the hundreds place)
- One thousand (1,000)
- Place value or number disk (pictured)
- Standard form (e.g., 576)
- Unit form (e.g., 5 hundreds 7 tens 6 ones)
- Word form (e.g., five hundred seventy-six)

#### Familiar Terms and Symbols
- $=, <, >$ (equal, less than, greater than)
- Altogether (e.g., 59 centimeters and 17 centimeters; altogether there are 76 centimeters)
- Bundling, grouping (putting smaller units together to make a larger one, e.g., putting 10 ones together to make a ten or 10 tens together to make a hundred)
- How many more/less (the difference between quantities)
- More than/less than (e.g., 576 is more than 76; 76 is less than 576)
- Number sentence (an equation or inequality that has a true or false value and contains no unknowns, e.g., $3 + 2 = 5$)
- Ones place (e.g., the 6 in 576 is in the ones place)
- Place value (the unitary values of the digits in numbers)
- Renaming, changing (instead of carrying or borrowing, e.g., a group of 10 ones is renamed a ten when the ones are bundled and moved from the ones to the tens place; if using $1$ bills, they may be changed for a $10$ bill when there are enough)
- Tens place (e.g., the 7 in 576 is in the tens place)
- Units of ones, tens, hundreds, one thousand (a single one and groups of 10s, 100s, and 1,000)

---

*These are terms and symbols students have seen previously.*

Greeley-Evans School District 6 Updated 6-6-16

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2nd Grade

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<table>
<thead>
<tr>
<th>Module 3 Standards</th>
<th>Examples of Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Major standards (areas of intensive focus)</strong> - underlined and bolded</td>
<td><strong>What do students need to know and be able to do? What does mastery of standard look like?</strong></td>
</tr>
<tr>
<td>Supporting standards - (supports the major standards and is taught with major standards) - bolded</td>
<td></td>
</tr>
<tr>
<td>Additional standards- (doesn’t connect to major work but is important to the progressions) italics.</td>
<td></td>
</tr>
<tr>
<td><strong>District 6 Priority Standards are highlighted</strong></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Understand place value.</th>
<th>Students need to know:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2.NBT.1</strong> 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:</td>
<td>• Build from 1st grade NBT 2 to move to hundreds, tens and ones</td>
</tr>
<tr>
<td>a. 100 can be thought of as a bundle of ten tens—called a “hundred.”</td>
<td>• Place holder of 0 has a place within the number</td>
</tr>
<tr>
<td>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).</td>
<td>• Bundled groups</td>
</tr>
<tr>
<td></td>
<td>• Any number is a bundled group as well as individual ones, tens, etc.</td>
</tr>
<tr>
<td></td>
<td>• Ten tens bundled is one hundred</td>
</tr>
<tr>
<td></td>
<td>• When adding one hundred the value increases</td>
</tr>
</tbody>
</table>

This standard is only taught in this module.

| **2.NBT.2** Count within 1000; skip-count by 5s, 10s, and 100s. | • Manipulation of different numbers and different place values to make new numbers |
| This standard is only taught in this module.                    | • Bundling numbers and ability to explain the changes to the numbers                |

Mastery looks like:

• Counting by 5’s, 10’s, 100’s

---

12Use an analog clock to provide a context for skip-counting by fives.
### 2.NBT.3 Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.

**Students need to know:**
- Unit form and written form are not the same thing (unit form 6 hundred)
- Place value in order to do expanded notation

**Examples:**
- Base-ten numerals: 637
- Number names: six hundred thirty seven
- Expanded form: 600 + 30 + 7

**Mastery looks like:**
- Any number to 1,000 in all three forms

This standard is only taught in this module.

### 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.

**Students need to know:**
- This standard builds on the work of 2.NBT.1 and 2.NBT.3 by having students compare two numbers by examining the amount of hundreds, tens and ones in each number.
- Students are introduced to the symbols greater than (>), less than (<) and equal to (=) in First Grade, and use them in Second Grade with numbers within 1,000.
- Students should have ample experiences communicating their comparisons in words before using only symbols in this standard.

**Mastery looks like:**

#### Example:

<table>
<thead>
<tr>
<th>Student 1</th>
<th>Student 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>452 has 4 hundreds 5 tens and 2 ones. 455 has 4 hundreds 5 tens and 5 ones. They have the same number of hundreds and the same number of tens, but 455 has 5 ones and 452 only has 2 ones, 452 is less than 455. 452 &lt; 455</td>
<td>452 is less than 455. I know this because when I count up I say 452 before I say 455.</td>
</tr>
</tbody>
</table>

**Key:**
- **“Must do” Lessons (Focuses on the standard in depth)**
- **“May do” Lessons (Based on student needs)**

---

The “must do” lessons were selected due to the math concept taught in the lesson, based on the EngageNY objective. Within these lessons, the objective is scaffolded from the fluency activities into the concept development and then practiced in the problem set. However, the “must do” lessons may not be perfect for you students. So, as you look at these “must do” lessons, customize the lessons around the math concept and your students. The “may do” lessons may be ways to reteach or extend the math concepts for your students. Don’t assume that they are an omit lesson. Use your understanding of the math concepts and your knowledge of what your students need to make the decision to use or omit the lesson.

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Based on a work at [www.engageny.org](http://www.engageny.org), [www.smarterbalanced.org](http://www.smarterbalanced.org) and the CCSS Progression Documents.
<table>
<thead>
<tr>
<th>Standards</th>
<th>Topic and Objectives</th>
<th>Days:</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.NBT.1 A</td>
<td>Forming Base Ten Units of Ten, a Hundred, and a Thousand</td>
<td>1</td>
</tr>
<tr>
<td>Lesson 1: Bundle and count ones, tens, and hundreds to 1,000. (MP.3)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

By the end of Topic A, your students should be able to:
- Bundle and count objects with ones, tens, and hundreds to 1,000.

<table>
<thead>
<tr>
<th>2.NBT.2</th>
<th>Understanding Place Value Units of One, Ten, and a Hundred</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lesson 2: Count up and down between 100 and 220 using ones and tens. (MP.7)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lesson 3: Count up and down between 90 and 1,000 using ones, tens, and hundreds. (MP.7)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

By the end of Topic B, your students should be able to:
- Represent counting up and down between 90-1,000 with drawings of hundreds, tens, and ones.

<table>
<thead>
<tr>
<th>2.NBT.3</th>
<th>Three-Digit Numbers in Unit, Numeral, Expanded, and Word Forms</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lesson 4: Count up to 1,000 on the place value chart. (MP.6)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lesson 5: Write base ten three-digit numbers in unit form; show the value of each digit. (MP.6)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lesson 6: Write base ten numbers in expanded form. (MP.6)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lesson 7: Write, read, and relate base ten numbers in all forms. (MP.6)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Lesson 5 builds upon number bond concepts from Module 1.

By the end of Topic C, your students should be able to:
- Count efficiently 0-1,000 (using ones, tens, hundreds).
- Know the values of the ones, tens, hundreds digits.
- Write numbers 0-1,000 in expanded form.
- Read and write numbers to 1,000 in their numeral form.

<table>
<thead>
<tr>
<th>2.NBT.2</th>
<th>Modeling Base Ten Numbers Within 1,000 with Money</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lesson 8: Count the total value of $1, $10, and $100 bills up to $1,000. (MP.2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lesson 9: Count from $10 to $1,000 on the place value chart and the empty number line. (MP.2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lesson 10: Explore $1,000. How many $10 bills can we change for a thousand dollar bill? (MP.2)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Lesson 10 omit or could be used as a performance task.

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By the end of Topic D, your students should be able to:

- Use one, tens, hundred bills to demonstrate understanding of place value.

**Snapshot Assessment 2.NBT.2 Part A Problems 1-3**

1. **358 + 10 =**
   - What are 5 numbers you would say if you skip counted by 10s and started at 358? (**DOK 1**)

2. **358 + 100 =**
   - What are 10 numbers you would say if you skip counted by 100s and started at 358? (**DOK 1**)

3. Complete the pattern (**DOK 1**)
   - 460, 470, 480, _____, _____

**2.NBT.A**

**E** Modeling Numbers Within 1,000 with Place Value Disks

- **Lesson 11:** Count the total value of ones, tens, and hundreds with place value disks.
- **Lesson 12:** Change 10 ones for 1 ten, 10 tens for 1 hundred, and 10 hundreds for 1 thousand. (**MP.7**)
- **Lesson 13:** Read and write numbers within 1,000 after modeling with number disks. (**MP.6**)
- **Lesson 14:** Model numbers with more than 9 ones or 9 tens; write in expanded, unit, numeral, and word forms.
- **Lesson 15:** Explore a situation with more than 9 groups of 10. (**MP.7**)

**Days: 5**

**Remediation Lesson 13:** Skill has already been taught, use as needed.

By the end of Topic E, your students should be able to:

- Use place value discs and base ten blocks to model numbers to 1,000.
- Change 10 ones for 1 ten, 10 tens for 1 hundred, and 10 hundreds for 1 thousand.
- Model numbers with more than 9 ones or 9 tens (ex: 1 hundred, 5 tens, 2 ones = 15 tens, 2 ones)
- Apply above skills to word problems.

**Snapshot Assessment 2.NBT.1 Part B Problems 1-4**

1. RashaNique has 285 Pokemon cards. Write the number of cards in expanded form. (**DOK 1**)

2. Draw 2 ways you could show 186 using place value blocks. (**DOK 1**)

3. DeAndre wants to make 237 in place value blocks, but he ran out of hundreds blocks. How can he represent 237 without hundreds blocks? (**DOK 1**)

**2.NBT.4**

**F** Comparing Two Three-Digit Numbers

- **Lesson 16:** Compare two three-digit numbers using <, >, and =.
- **Lesson 17:** Compare two three-digit numbers using <, >, and = when there are more

**Days: 2**

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Greeley-Evans School District 6 Updated 6-6-16

2nd Grade

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Based on a work at [www.engageny.org](http://www.engageny.org), [www.smarterbalanced.org](http://www.smarterbalanced.org) and the CCSS Progression Documents.
Lesson 18: Order numbers in different forms.

1. Use <, >, or = to fill in the blank. (DGK 1)
2. Use <, >, or = to fill in the blank. (DGK 1)
3. Use <, >, or = to fill in the blank. (DGK 1)
4. Use <, >, or = to fill in the blank. (DGK 1)

Optional Lesson 18: Use as needed. This is extra practice.

By the end of Topic F, your students should be able to:

- Compare 2 three-digit numbers based on their place value understanding.


Lesson 18:

Order numbers in different forms.

Days: 2

Extension Lesson 21: This lesson is an extension of lessons 2 and 3. The problem set could be used as an exit ticket.

By the end of Topic G, your students should be able to:

- Counting up and down by ones, tens, hundreds.

Total Instructional Days: 18 "Must do" Lessons in a 21 day window, giving opportunity to support foundational standards and go in depth with focus standards.

Supporting Resources

- **Foundational standards to support pre-requisite needs**
  - 1.NBT.2 Understand that the two digits of a two-digit number represent amounts of tens and ones. Understand the following as special cases:
    - a. 10 can be thought of as a bundle of ten ones—called a “ten.”
    - b. The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones.

- **Suggested Stations/Lessons/Games**
  - Problem Solving Tasks:
    - Nina's Numbers: This task includes practice for two-digit addition and subtraction for numbers up to 100.
    - Tens and Ones With Snap Cubes
    - Build a Train

- **Suggested Number Talks**
  - Focus on 2nd grade computational number talks.
c. The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens (and 0 ones).

<table>
<thead>
<tr>
<th>1.NBT.3</th>
<th>Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols &gt;, =, and &lt;.</th>
</tr>
</thead>
</table>
| Small Group Stations: | • Comparing Two-Digit Numbers  
• Scoop It |

### Module 3 Standards

| Major standards (areas of intensive focus) - underlined and bolded |
| Supporting standards - (supports the major standards and is taught with major standards) - bolded |
| Additional standards -(doesn’t connect to major work but is important to the progressions) italics. |

**Understand place value.**

<table>
<thead>
<tr>
<th>2.NBT.1</th>
<th>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:</th>
</tr>
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<tbody>
<tr>
<td>a. 100 can be thought of as a bundle of ten tens - called a “hundred.”</td>
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<tr>
<td>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).</td>
<td></td>
</tr>
</tbody>
</table>

This standard is only taught in this module.

### Suggested Stations/Lessons/Games

- **Suggested Number Talks**
  - How many ones are in 32?
  - 13 tens = _______
  - 45 + 26 =
  - 50 - 28 =

### Problem Solving Tasks:

- **Carol’s Numbers**
- **Counting Stamps**
- **Curious Subtraction**
- **Food Donation** (pg.16)
- **Bundling and Unbundling**
- **Making 124**

### Video Resources:

- **Learn Zillion**
- **Ten Marks**
2.NBT.2 Count within 1000; skip-count by 5s\textsuperscript{13}, 10s, and 100s.
This standard is only taught in this module.

Snapshot Assessment 2.NBT.2 Part B
Small Group Stations:
• Count by 5s
• Counting Collections

2.NBT.3 Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.
This standard is only taught in this module.

Snapshot Assessment 2.NBT.3
Problem Solving Task:
• Carol’s Numbers

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.
This standard is only taught in this module.

Snapshot Assessment 2.NBT.4 Part B
Problem Solving Tasks:
• Carol’s Numbers
• Comparisons 1
• Comparisons 2
• Digits 2-5-7
• Food Donation (pg.16)

Suggested Tools and Representations:
*These are recommendations from ENY Module Overview

- 2 boxes of 1,000 straws per class of 25
- Clock number line (details in Lesson 1 Fluency Practice)
- Dice, 1 per pair
- Dienes blocks
- Hide Zero cards (also known as place value cards) showing numbers 1-5, 10-50, and 100–500
  (1 small set per student) (Lesson 4 Template 1))
- Hundreds place value chart (Lesson 4 Template 2)
- Meter strip (Lesson 1 Template)
- Number spelling activity sheet (Lesson 7 Activity Sheet)

\textsuperscript{13}Use an analog clock to provide a context for skip-counting by fives.

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2nd Grade Module 4 Knowledge Packet
Addition and Subtraction within 200 with Word Problems to 100
2016-2017 Module Window: October 27th - December 20th

Foundational standards to support pre-requisite needs

| 1.OA.1 | 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, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem. |

Students need to know:
- Addition and subtractions within 20
- Word problems
- Unknown examples
- RDW- Understand, write and draw
- Draw to represent the problem
- Meaning of an equal sign is a misconceptions

Mastery Looks like:
- Solve any three types of position problems utilizing a pictorial representation

Examples of Standard

What do students need to know and be able to do? What does mastery of standard look like?

| 1.OA.1 | 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, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem. |

Students need to know:
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- Draw to represent the problem
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- Solve any three types of position problems utilizing a pictorial representation

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### 1.OA.3
**Apply properties of operations as strategies to add and subtract.** (Students need not use formal terms for these properties.)

*Examples:* If $8 + 3 = 11$ is known, then $3 + 8 = 11$ is also known. (Commutative property of addition.) To add $2 + 6 + 4$, the second two numbers can be added to make a ten, so $2 + 6 + 4 = 2 + 10 = 12$. (Associative property of addition.)

**Students need to know:**
- Balance with the equal sign

**Mastery looks like:**
- Filling in a missing number anywhere in the equations
- Proper use of tools
- Understanding commutative property is related to addition but different rules for subtraction

### 1.OA.4
**Understand subtraction as an unknown-addend problem.** For example, subtract 10 - 8 by finding the number that makes 10 when added to 8.

**Students need to know:**
- Counting up
- Part-part-whole
- Number bonds

**Mastery looks like:**
- Fluency in counting on and counting up
- Using a strategy to find a missing addend
- Effective use of a strategy

### 1.NBT.2
**Understand that the two digits of a two-digit number represent amounts of tens and ones.** Understand the following as special cases:

a. 10 can be thought of as a bundle of ten ones - called a “ten.”

b. The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones.

c. The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, students need to know:
- Tens and Leftovers
- Bundling to make tens and ones
- As you bundle a ten you are counting by tens
- Teens as ten and individual ones

**Mastery looks like:**
- Conceptual understanding of the numbers made up of tens and ones
- Place value of tens and ones
- 0 ones has a place

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Greeley-Evans School District 6 Updated 6-6-16

2nd Grade

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<table>
<thead>
<tr>
<th>Table 1</th>
<th>1.NBT.4</th>
<th>Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, 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 and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Student need to know:</td>
<td>- Represent addition of two-digit numbers</td>
</tr>
<tr>
<td></td>
<td>Mastery looks like:</td>
<td>- Decomposition of numbers</td>
</tr>
<tr>
<td></td>
<td></td>
<td><img src="image" alt="Image" /></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 2</th>
<th>2.NBT.1</th>
<th>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:</th>
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</thead>
<tbody>
<tr>
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<td>Students need to know:</td>
<td>- Build from 1st grade NBT 2 to move to hundreds, tens and ones</td>
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<td></td>
<td></td>
<td>- Place holder of 0 has a place within the number</td>
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<td>Mastery looks like:</td>
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<td></td>
<td></td>
<td>- Bundling numbers and ability to explain the changes to the numbers</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 3</th>
<th>2.NBT.2</th>
<th>Count within 1000; skip-count by 5s, 10s, and 100s.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Students need to know:</td>
<td>- 99 to 100 is a change in place value (when counting my ones and skip counting)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Written representation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Movement in hundred chart</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Counting with money (pennies, nickels, dimes, dollars)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Counting from variable starting points</td>
</tr>
<tr>
<td></td>
<td>Mastery looks like:</td>
<td></td>
</tr>
</tbody>
</table>
2.NBT.3 Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.

Students need to know:
- Unit form and written form are not the same thing (unit form 6 hundred)
- Place value in order to do expanded notation

Examples:
- Base-ten numerals
- Number names
- Expanded form
  - 637
  - six hundred thirty seven
  - 600 + 30 + 7

Mastery looks like:
- Any number to 1,000 in all three forms

Terminology

New or Recently Introduced Terms
- Algorithm (a step-by-step procedure to solve a particular type of problem)
- Compose (e.g., to make 1 larger unit from 10 smaller units)
- Decompose (e.g., to break 1 larger unit into 10 smaller units)
- Equation (two expressions with an equal sign between them; that is, an equation is a statement that two expressions are equal; however, there is no guarantee that the statement is true)
- New groups below (show newly composed units on the line below the appropriate place in the addition algorithm, pictured above on page 4)
- Simplifying strategy (e.g., to solve 299 + 6, think 299 + 1 + 5 = 300 + 5 = 305)
- Totals below (pictured above on page 4)

Familiar Terms and Symbols
- Addend
- Addition
- Bundle, unbundle, regroup, rename, change (compose or decompose a 10 or 100)

NOTES ON EXPRESSION, EQUATION, AND NUMBER SENTENCE:

Grade 2 lessons use the following terms based on the descriptions below.
- Expression: A statement that has no equal sign but can be evaluated to a number (e.g., 2 + 1, 13 – 6).
- Equation: A statement that two expressions are equal (e.g., 13 + 2 = 15, 22 – 14 = __, 10 – __ = 8).
- Number sentence (also addition or subtraction sentence): A statement that is true or false and, therefore, contains no unknowns (e.g., 21 > 7, 3 + 2 = 5).
### Module 4 Standards

<table>
<thead>
<tr>
<th>Major standards (areas of intensive focus) - underlined and bolded</th>
<th>Supporting standards - (supports the major standards and is taught with major standards) - bolded</th>
<th>Additional standards-(doesn’t connect to major work but is important to the progressions) italics.</th>
<th>Examples of Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students need to know:</td>
<td>What do students need to know and be able to do? What does mastery of standard look like?</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Represent and solve problems involving addition and subtraction.</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>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.</td>
<td>Students need to know:</td>
<td>- Extension of 1st grade, addition and subtraction up to 100</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Solving for unknown and finding what is missing</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- One and two steps word problems</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Unknown in all positions: Adding to, taking from, putting together, taking apart, comparing</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Visualization</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mastery looks like:</td>
<td>- Solve both steps in word problems adding and subtracting from whatever position</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Solving and explaining thinking</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- RDW steps in problem solving</td>
<td></td>
</tr>
<tr>
<td>This standard was previously taught in Module 1. This will be the last time it is taught.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Use place value understanding and properties of operations to add and subtract.</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>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.</td>
<td>Student need to know:</td>
<td>- Extension of NBT 4, adding and subtracting within 100</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Using place value strategy</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Relationship between addition and subtraction</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Various models/tools (base ten blocks, tape diagrams, number bonds, place value disks)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mastery looks like:</td>
<td>- Effective strategy for addition or subtraction within 100</td>
<td></td>
</tr>
</tbody>
</table>

---

This module work is limited to within 200. This work is extended to numbers within 1,000 in the next module.

---

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This standard was previously taught in Module 1. This will be the last time it is taught.

**2.NBT.6** Add up to four two-digit numbers using strategies based on place value and properties of operations.

- **Correct answer (fluent)**

Student need to know:
- Adding up to four two-digit numbers (within 200)
- String of two digit numbers up to four
- Could be a combination of one digit and two digit numbers
- Grouping of numbers based on place value
- Representations for grouping and adding

Mastery looks like:
- Adding with a place value strategy
- Place value to decompose numbers

This standard is only taught in this module.

**2.NBT.7** Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.

- **This standard will also be taught in Module 5.**

Students need to know:
- Addition and subtraction with 200
- Concrete model or drawing
- Written method
- Composing and decomposing
- Effective strategies
- Structure of numbers: understanding that 10 tens is 1 hundred, 10 hundreds is the same as 1 thousand
- Place value forms
- 3 +7 can help with 30 + 70 and relation to basic fact

Mastery looks like:
- Add the hundreds, tens and ones
- Subtraction with place value
- Effective strategy

**2.NBT.8** Mentally add 10 or 100 to a given number 100–900, and mentally subtract 10 or 100 from a given number 100–900.

- **This standard will also be taught in Module 5.**

Students need to know:
- Counting patterns
- Variable starting points
- Mentally adding 10 or 100

Mastery looks like:
- Mentally (without tools) count 10s and 100s from any starting number

**2.NBT.9** Explain why addition and subtraction strategies work, using place value and the properties of operations.

- **Students need to know:**
  - Efficiency and understanding of strategies
  - Explain why addition and subtraction strategies work

---

16 In this module, work is limited to within 200. This work is extended to numbers within 1,000 in the next module.

Greeley-Evans School District 6 Updated 6-6-16

2nd Grade

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(Explanations may be supported by drawings or objects.)

This standard will also be taught in Module 5.

**Content Suggestions**

The “must do” lessons were selected due to the math concept taught in the lesson, based on the EngageNY objective. Within these lessons, the objective is scaffolded from the fluency activities into the concept development and then practiced in the problem set. However, the “must do” lessons may not be perfect for you students. So, as you look at these “must do” lessons, customize the lessons around the math concept and your students. The “may do” lessons may be ways to reteach or extend the math concepts for your students. Don’t assume that they are an omit lesson. Use your understanding of the math concepts and your knowledge of what your students need to make the decision to use or omit the lesson.

<table>
<thead>
<tr>
<th>Standards</th>
<th>Topic and Objectives</th>
<th>Module Note:</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.OA.1</td>
<td>Sums and Differences Within 100</td>
<td>(Students should be solid with disks or base ten blocks before moving to dots, which is more abstract)</td>
</tr>
<tr>
<td>2.NBT.5</td>
<td>Lesson 1: Relate 1 more, 1 less, 10 more, and 10 less to addition and subtraction of 1 and 10. (MP.3)</td>
<td>Days: 5</td>
</tr>
<tr>
<td>2.NBT.8</td>
<td>Lesson 2: Add and subtract multiples of 10 including counting on to subtract. (MP.3)</td>
<td></td>
</tr>
<tr>
<td>2.NBT.9</td>
<td>Lesson 3: Add and subtract multiples of 10 and some ones within 100. (MP.2)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lesson 4: Add and subtract multiples of 10 and some ones within 100. (MP.2)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lesson 5: Solve one- and two-step word problems within 100 using strategies based on place value. (MP.1)</td>
<td></td>
</tr>
</tbody>
</table>

By the end of Topic A, your students should be able to:

**Key:**

- **“Must do” Lessons (Focuses on the standard in depth)**
- **“May do” Lessons (Based on student needs)**

---

Greeley-Evans School District 6 Updated 6-6-16

2nd Grade

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• Fluently add and subtract 10 more/10 less within 100.
• Use place value knowledge to add and subtract within 100.
• Solve two step word problems based on place value strategies.

Snapshot Assessment 2.OA.1 Part B (Problems 1-2)

<table>
<thead>
<tr>
<th>B</th>
<th>Strategies for Composing a Ten</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lesson 6: Use manipulatives to represent the composition of 10 ones as 1 ten with two-digit addends. (MP.4)</td>
</tr>
<tr>
<td></td>
<td>Lesson 7: Relate addition using manipulatives to a written vertical method. (MP.4)</td>
</tr>
<tr>
<td></td>
<td>Lesson 8: Use math drawings to represent the composition and relate drawings to a written method. (MP.6)</td>
</tr>
<tr>
<td></td>
<td>Lessons 9: Use math drawings to represent the composition when adding a two-digit to a three-digit addend. (MP.6)</td>
</tr>
<tr>
<td></td>
<td>Lessons 10: Use math drawings to represent the composition when adding a two-digit to a three-digit addend. (MP.3)</td>
</tr>
</tbody>
</table>

By the end of Topic B, your students should be able to:
• Use manipulatives to represent two-digit addition.
• Represent two-digit addition with drawings.
• Solve two-digit addition problems using the vertical method.

<table>
<thead>
<tr>
<th>C</th>
<th>Strategies for Decomposing a Ten</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lesson 11: Represent subtraction with and without the decomposition of 1 ten as 10 ones with manipulatives. (MP.4)</td>
</tr>
<tr>
<td></td>
<td>Lesson 12: Relate manipulative representations to a written method. (MP.2)</td>
</tr>
<tr>
<td></td>
<td>Lesson 13: Use math drawings to represent subtraction with and without decomposition and relate drawings to a written method. (MP.2)</td>
</tr>
<tr>
<td></td>
<td>Lessons 14-15: Represent subtraction with and without the decomposition when there is a three-digit minuend. Combine Lesson 14 &amp; 15 (Lesson 14 - MP.6, Lesson 15 - MP.3)</td>
</tr>
</tbody>
</table>

Lesson 7- Extended practice: Not intended to teach an algorithm. Be selective about problem sets on the first page to allow time for the story problems on the second

Days: 4

Days: 5

In this topic consider using Understanding Numbers Addition and Subtraction: How Many Left, Change it, What Do You Need, Splitting Numbers, and How Many Hiding. Students need practice with place value strategies and not the traditional algorithm.

*Ask a 3rd - 5th grade teacher about Understanding Numbers: Addition and Subtraction book and stations
Lesson 16: Solve one- and two-step word problems within 100 using strategies based on place value.

By the end of Topic C, your students should be able to:
- Unbundle/Decompose two-digit numbers using place value disks.
- Use place value to explain subtraction strategies.
- Draw models to show the exchange of tens/ones.

<table>
<thead>
<tr>
<th>2.NBT.6</th>
<th>2.NBT.7</th>
<th>2.NBT.8</th>
<th>2.NBT.9</th>
<th>Strategies for Composing Tens and Hundreds</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Lesson 17: Use mental strategies to relate compositions of 10 tens as 1 hundred to 10 ones as 1 ten. (MP.3)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Lesson 18: Use manipulatives to represent additions with two compositions. (MP.4)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Lesson 19: Relate manipulative representations to a written method. (MP.4)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Lessons 20: Use math drawings to represent additions with up to two compositions and relate drawings to a written method. (MP.6)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Lesson 21: Use math drawings to represent additions with up to two compositions and relate drawings to a written method. (MP.3)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Lesson 22: Solve additions with up to four addends with totals within 200 with and without two compositions of larger units. (MP.3)</td>
</tr>
</tbody>
</table>

By the end of Topic D, your students should be able to:
- Relate place value manipulatives to written two-digit addition/subtraction problems.
- Use drawings to show regroupings of both tens and ones for two-digit addition problems.

Snapshot Assessment 2.NBT.5 (Problems 1-4)

1. If 34 + 23 = 57, then
   57 - 34 =

2. Break apart the following numbers into tens and ones. Then, add the tens. Then, add the ones. Finally, put together both sums.
   45 - 17 =

3. Use the table below to find the difference (subtraction): 400 8

<table>
<thead>
<tr>
<th>Tens</th>
<th>Ones</th>
</tr>
</thead>
<tbody>
<tr>
<td>44</td>
<td>21</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>E</th>
<th>2.NBT.7 2.NBT.9</th>
<th>Strategies for Decomposing Tens and Hundreds</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lesson 23: Use number bonds to break apart three-digit minuends and subtract from the hundred. (MP.2)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lesson 24: Use manipulatives to represent subtraction with decompositions of 1 hundred as 10 tens and 1 ten as 10 ones. (MP.4)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lesson 25: Relate manipulative representations to a written method. (MP.2)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lesson 26: Use math drawings to represent subtraction with up to two decompositions and relate drawings to a written method. (MP.6)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lessons 27: Subtract from 200 and from numbers with zeros in the tens place. (MP.4)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lessons 28: Subtract from 200 and from numbers with zeros in the tens place. (MP.4)</td>
<td></td>
</tr>
<tr>
<td>Days: 5</td>
<td>Add in an SCR about why solving an addition problem in two different ways leads to the same sum.</td>
<td></td>
</tr>
</tbody>
</table>

Optional Lesson 27: The objective is covered in Lesson 28.

By the end of Topic E, your students should be able to:
- Have a conceptual understanding of addition/subtraction within 200.
- Mentally add and subtract 100
- Use number bonds to subtract
- Unbundle to solve subtraction problems

<table>
<thead>
<tr>
<th>F</th>
<th>2.OA.1 2.NBT.7 2.NBT.9</th>
<th>Student Explanations of Written Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lesson 29: Use and explain the totals below written method using words, math drawings, and numbers. (MP.1)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lesson 30: Compare totals below to new groups below as written methods. (MP.3)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lesson 31: Solve two-step word problems within 100. (MP.1)</td>
<td></td>
</tr>
<tr>
<td>Days: 3</td>
<td>Add in an SCR about why solving an addition problem in two different ways leads to the same sum.</td>
<td></td>
</tr>
</tbody>
</table>

Greeley-Evans School District 6 Updated 6-6-16

2nd Grade

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By the end of Topic F, your students should be able to:

- Add using a variety of place value strategies.
- Construct viable arguments and critique the reasoning of others.

**Snapshot Assessment 2.NBT.9**
(Problems 1-3)

**Total Instructional Days:** 28 “Must do” Lessons in a 36 day window, giving opportunity to support foundational standards and go in depth with focus standards.

---

### Supporting Resources

<table>
<thead>
<tr>
<th>Foundational standards to support pre-requisite needs</th>
<th>Suggested Stations/Lessons/Games</th>
<th>Suggested Number Talks</th>
</tr>
</thead>
</table>
| **1.OA.1** 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, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem. | • DNC Book 3: 1-46 “Story Problems”
• DNC Book 3: 1-46 “Story Problems” using 3 one-digit numbers
• DNC Book 2: 1-3 “Acting out Stories; using Counters”
• DNC Book 2: 1-3 “Acting out Stories; using Counters” using 3 one-digit numbers
• DNC Book 2: 1-4 “Modeling Addition and Subtraction Equations”
• DNC Book 2: 1-4 “Modeling Addition and Subtraction Equations” using 3 one-digit numbers
• DNC Book 2: 2-12 “Counting Boards: Number-Combination Stories”
• 1st Grade EngageNY Module 2 | There is 1 book on a shelf. 4 more books are added. Now how many books are there? There are 6 color photos and 7 black and white photos. How many photos are there all together? There were 7 bunnies on the hill and some hopped away. Now there are 5 bunnies on the hill. How many hopped away? |
| **1.OA.3** Apply properties of operations as strategies to add and subtract. (Students need not use formal terms for these properties.) Examples: If 8 + 3 = 11 is known, then 3 + 8 = 11 is also known. (Commutative property of addition.) To add 2 + 6 + 4, the second two numbers can be added to make a ten, so 2 + 6 + 4 = 2 + 10 = 12. (Associative property of addition.) | • DNC Book 2: 2-1 “Snap-It”
• DNC Book 2: 2-2 “The Tub Game”
• DNC Book 2: 2-5 “The Cave Game”
• DNC Book 2: 3-13 “Counting Boards: How many ways?”
• DNC Book 2: 3-15 “Build a Floor”

---

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<table>
<thead>
<tr>
<th>Property of Addition</th>
<th>Resources</th>
</tr>
</thead>
</table>
| 1.OA.4 Understand subtraction as an unknown-addend problem. For example, subtract 10 - 8 by finding the number that makes 10 when added to 8. | DNC Book 2: 3-18 “What numbers can you make?”
DNC Book 2: 3-26 “What’s Missing?”
Kindergarten EngageNY Module 4; Topic E; Lessons 27-28
Kindergarten EngageNY Module 4; Topic F; Lesson 29 |
| 1.NBT.2 Understand that the two digits of a two-digit number represent amounts of tens and ones. Understand the following as special cases: | DNC Book 3: 1-24 -28 “Rearrange - It”
DNC Book 3: 1-30 “Give-and-Take with Tens and Ones”
DNC Book 3: 1-45 “Addition and Subtraction of Two-Digit Numbers”
1st Grade EngageNY Module 2, Topic D |
| a. 10 can be thought of as a bundle of ten ones - called a “ten.” | |
| b. The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones. | |
| c. The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens (and 0 ones). | |
| 1.NBT.4 Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, 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 and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten. | DNC Book 3: 1-22 “Chart Puzzles”
1st Grade EngageNY Module 4, Topic C Lesson 11
1st Grade EngageNY Module 4, Topic D Lessons 13-14 |
<p>| 40 + 30 = 40 + 35 = 43 + 35 = | |</p>
<table>
<thead>
<tr>
<th>2.NBT.1</th>
<th>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:</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>100 can be thought of as a bundle of ten tens - called a “hundred.”</td>
</tr>
<tr>
<td>b.</td>
<td>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).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2.NBT.2</th>
<th>Count within 1000; skip-count by 5s, 10s, and 100s.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suggested Stations/Lessons/Games</td>
<td>Have students write the numbers 1 - 1,000 on a blank hundreds grid or hundreds grids with some of the numbers filled in so they do not get off track. Use this resource to (links to number chart generator):</td>
</tr>
<tr>
<td></td>
<td>➢ Skip count</td>
</tr>
<tr>
<td></td>
<td>➢ When you count back from 201, what are the first 3 numbers that you say? 200, 199, 198.</td>
</tr>
<tr>
<td></td>
<td>➢ The ultimate goal for second graders is to be able to count in multiple ways with no visual support.</td>
</tr>
<tr>
<td></td>
<td>DNC Book 3, Chapter 1, Section A Understanding Regrouping - the Process and the Patterns</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2.NBT.3</th>
<th>Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suggested Stations/Lessons/Games</td>
<td>Understanding Numbers Place Value</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2.OA.1</th>
<th>Use addition and subtraction within 100 to solve</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small Group Stations:</td>
<td>DNC Book 3, Chapter 1, Section C</td>
</tr>
</tbody>
</table>

| 2nd Grade |  |

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<table>
<thead>
<tr>
<th>Grade</th>
<th>Task</th>
<th>Notes</th>
</tr>
</thead>
</table>
| 2 | One- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem. This standard was previously taught in Module 1. This will be the last time it is taught. Use place value understanding and properties of operations to add and subtract. 17<br>**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. This standard was previously taught in Module 1. This will be the last time it is taught. **2.NBT.6** Add up to four two-digit numbers using strategies based on place value and properties of operations. This standard is only taught in this module. **2.NBT.7** Add and subtract within 100, 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. | Small Group Stations:  
• DNC Book 3, Chapter 1, Section 3: Addition and Subtraction of Two-Digit Numbers  
• Understanding Numbers: Addition and Subtraction Level 1: Working with Tens and Ones  
Problem Solving Task:  
• **Curious Subtraction**  
Small Group Stations:  
• DNC Book 3, Chapter 1, Section 3: Addition and Subtraction of Two-Digit Numbers  
• Understanding Numbers: Addition and Subtraction Level 1: Working with Tens and Ones  
Problem Solving Task:  
• Optional: follow up Lesson 22 with Toll Bridge Puzzle.  
Include base 10 blocks drawn and available for manipulation:  
• 5 + 8 =  
• 170 + 8 =  
• 175 + 8 =  
| 2 + 25 =  
12 + 25 =  
16 + 8 =  
20 + 8 =  
11 - 7 =  
21 - 7 =  |

---
17 In this module, work is limited to within 200. This work is extended to numbers within 1,000 in the next module.
This standard will also be taught in Module 5.

2.NBT.8 Mentally add 10 or 100 to a given number 100–900, and mentally subtract 10 or 100 from a given number 100–900.

This standard will also be taught in Module 5.

2.NBT.9 Explain why addition and subtraction strategies work, using place value and the properties of operations. (Explanations may be supported by drawings or objects.)

This standard will also be taught in Module 5.

### Suggested Tools and Representations:

- Arrow notation (arrow way)
- Chip model (pictured)
- Hide Zero cards (pictured)
- Number bond
- Personal white boards
- Place value chart (Template in Lesson 1)

---

18 In this module, work is limited to within 200. This work is extended to numbers within 1,000 in the next module.

Greeley-Evans School District 6 Updated 6-6-16

2nd Grade

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Place value sets (19 ones, 19 tens, 18 hundreds, 1 one thousand per set)

- Rekenrek
- Tape diagram

Note: Students work through a progression of models to represent the addition and subtraction algorithm. Following the use of actual place value disks, students learn to draw the disks to represent numbers. This model provides an added level of support in that students write the value on each disk (see image below left). Because the value is on the disk, there is no need to label the place value chart. Next, students learn the chip model, drawing dots on a labeled place value chart (see image below right). While still pictorial, this model is more abstract because the value of the chip derives from its placement on the chart.

2nd Grade Module 5 Knowledge Packet
Addition and Subtraction within 1,000 with Word Problems to 100
2016-2017 Module Window: January 4th - February 9th

<table>
<thead>
<tr>
<th>Foundational standards to support pre-requisite needs</th>
<th>Examples of Standard</th>
<th>What do students need to know and be able to do? What does mastery of standard look like?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.OA.3 Apply properties of operations as strategies to add and subtract. Examples: If $8 + 3 = 11$ is known, then $3 + 8 = 11$ is also known. (Commutative property of addition.) To add $2 + 6 + 4$, the second two numbers can be added to make a ten, so $2 + 6 + 4 = 2 + 10 = 12$. (Associative property of addition.)</td>
<td>Students need to know: • Balance with the equal sign Mastery looks like: • Filling in a missing number anywhere in the equations • Proper use of tools Understanding commutative property is related to addition but different rules for subtraction</td>
<td></td>
</tr>
<tr>
<td>Standard</td>
<td>Description</td>
<td></td>
</tr>
<tr>
<td>----------</td>
<td>-------------</td>
<td></td>
</tr>
<tr>
<td>1.OA.4</td>
<td>Understand subtraction as an unknown-addend problem. For example, subtract 10 - 8 by finding the number that makes 10 when added to 8.</td>
<td></td>
</tr>
<tr>
<td>Students need to know:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Counting up</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Part-part-whole</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Number bonds</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mastery looks like:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Fluency in counting on and counting up</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Using a strategy to find a missing addend</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Effective use of a strategy</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| 1.NBT.5 | Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used. |
| Students need to know: |
| - Place value relationship in a 10 more and 10 less without effect to the ones place |
| - Ten more |
| - Ten less |
| - I tens group |
| - Explain |
| - Without having to count |
| Mastery looks like: |
| - Given any two digit number, decompose a number to be able to reason 10 more and 10 less |
| - Explain their thinking |

| 1.NBT.6 | Subtract multiples of 10 in the range 10-90 from multiples of 10 in the range 10-90 (positive or zero differences), 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 and explain the reasoning used. |
| Students need to know: |
| - Place value with multiples of 10 |
| - Models and drawings to represent |
| - Written method and explaining |
| Mastery looks like: |
| - Drawing the representation with the correct answer using place value and explain with written explanation |

| 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 |
| Students need to know: |
| - Build from 1st grade NBT 2 to move to hundreds, tens and ones |
| - Place holder of 0 has a place within the number |
| - Bundled groups |
| - Any number is a bundled group as well as individual ones, tens, etc. |

---

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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).

- Ten tens bundled is one hundred
- When adding one hundred the value increases

Mastery looks like:
- Manipulation of different numbers and different place values to make new numbers
- Bundling numbers and ability to explain the changes to the numbers

### 2.NBT.2 Count within 1000; skip-count by 5s, 10s, and 100s.

Students need to know:
- 99 to 100 is a change in place value (when counting my ones and skip counting)
- Written representation
- Movement in hundred chart
- Counting with money (pennies, nickels, dimes, dollars)
- Counting from variable starting points

Mastery looks like:
- Counting by 5's, 10's, 100's
- Manipulation of any number to skip count (example start at 34 and count by 10s)

### 2.NBT.3 Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.

Students need to know:
- Unit form and written form are not the same thing (unit form 6 hundred)
- Place value in order to do expanded notation

Mastery looks like:
- Any number to 1,000 in all three forms

### 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.

Student need to know:
- Extension of NBT 4, adding and subtraction within 100
- Using place value strategy
- Relationship between addition and subtraction
- Various models/tools (base ten blocks, tape diagrams, number bonds, place value disks)

Mastery looks like:
- Effective strategy for addition or subtraction within 100
- Correct answer (fluent)

---

### Terminology

- **Modifying Frames**
- **Contextualizing Knowledge**
- **Generalizing Learning**
- **Extending Understanding**
- **Applying Knowledge**
- **Reflecting on Learning**

*2nd Grade*

Greeley-Evans School District 6 Updated 6-6-16

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Based on a work at [www.engageny.org](http://www.engageny.org), [www.smarterbalanced.org](http://www.smarterbalanced.org) and the CCSS Progression Documents.*
New or Recently Introduced Terms
- Compensation (simplifying strategy where students add or subtract the same amount to or from both numbers to create an equivalent, but simpler, problem)

Familiar Terms and Symbols
- Addend
- Addition
- Algorithm
- Bundle
- Compose
- Decompose
- Difference
- Equation
- New groups below
- Number bond
- Place value
- Place value chart (pictured to the right)
- Place value or number disk (pictured to the right)
- Rename
- Simplifying strategy
- Subtraction
- Tape diagram
- Total
- Unbundle
- Units of ones, tens, hundreds

<table>
<thead>
<tr>
<th>Module 5 Standards</th>
<th>Examples of Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major standards (areas of intensive focus) - underlined and bolded</td>
<td>What do students need to know and be able to do? What does mastery of standard look like?</td>
</tr>
<tr>
<td>Supporting standards - (supports the major standards and is taught with major standards) - bolded</td>
<td></td>
</tr>
</tbody>
</table>

3These are terms and symbols students have seen previously.

Greeley-Evans School District 6 Updated 6-6-16

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### 2.NBT.7 Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.

This standard is taught in Module 4 and 5. This will be the last time this standard is taught.

In this module, work is limited to within 200. This work is extended to numbers within 1,000 in the next module. Students need to know:
- Addition and subtraction with 200
- Concrete model or drawing
- Written method
- Composing and decomposing
- Effective strategies
- Structure of numbers: understanding that 10 tens is 1 hundred, 10 hundreds is the same as 1 thousand
- Place value forms
- 3 + 7 can help with 30 + 70 and relation to basic fact

Mastery looks like:
- Add the hundreds, tens and ones
- Subtraction with place value
- Effective strategy

### 2.NBT.8 Mentally add 10 or 100 to a given number 100–900, and mentally subtract 10 or 100 from a given number 100–900.

This standard is taught in Module 4 and 5. This will be the last time this standard is taught.

Students need to know:
- Counting patterns
- Variable starting points
- Mentally adding 10 or 100

Mastery looks like:
- Mentally (without tools) count 10s and 100s from any starting number

### 2.NBT.9 Explain why addition and subtraction strategies work, using place value and the properties of operations. (Explanations may be supported by drawings or objects.)

Students need to know:
- Efficiency and understanding of strategies
- Explain why addition and subtraction strategies work
- Place value strategies
- Drawing or objects to represent how the addition and subtraction strategies work

Mastery looks like:
This standard is taught in Module 4 and 5. This will be the last time this standard is taught.

- Conceptually understand more than one strategy
- Explanation in written form supported with drawings or objects
- Vocabulary

## Content Suggestions

The “must do” lessons were selected due to the math concept taught in the lesson, based on the EngageNY objective. Within these lessons, the objective is scaffolded from the fluency activities into the concept development and then practiced in the problem set. However, the “must do” lessons may not be perfect for you students. So, as you look at these “must do” lessons, customize the lessons around the math concept and your students. The “may do” lessons may be ways to reteach or extend the math concepts for your students. Don’t assume that they are an omit lesson. Use your understanding of the math concepts and your knowledge of what your students need to make the decision to use or omit the lesson.

### Standards

2.NBT.7 2.NBT.8 2.NBT.9

### Topic and Objectives

#### 2.NBT.7

- **A** Strategies for Adding and Subtracting Within 1,000
  - Lesson 1: Relate 10 more, 10 less, 100 more, and 100 less to addition and subtraction of 10 and 100. (MP.8)
  - Lesson 2: Add and subtract multiples of 100 including counting on to subtract. (MP.8)
  - Lesson 3: Add multiples of 100 and some tens within 1,000. (MP.6)
  - Lesson 4: Subtract multiples of 100 and some tens within 1,000. (MP.7)
  - Lesson 5: Use the associative property to make a hundred in one addend. (MP.7)
  - Lesson 6: Use the associative property to subtract from three-digit numbers and verify solutions with addition. (MP.7)
  - Lesson 7: Share and critique solution strategies for varied addition and subtraction problems within 1,000. (MP.3)

By the end of Topic A, your students should be able to:

- Decide the most efficient strategy for solving problems.
- Add and subtract with multiples of 100 and tens.
- Use the associative property to add and subtract from three-digit numbers.
- Construct viable arguments and critique the reasoning of others.

#### 2.NBT.8 2.NBT.9

- **B** Strategies for Composing Tens and Hundreds Within 1,000
  - Lesson 8: Relate manipulative representations to the addition algorithm. (MP.8)
  - Lesson 9: Relate manipulative representations to the addition algorithm. (MP.8)

### Days

- **A** Days: 7
- **B** Days: 5

---

**Key:**

- “Must do” Lessons (Focuses on the standard in depth)
- “May do” Lessons (Based on student needs)

---

Based on a work at [www.engageny.org](http://www.engageny.org), [www.smarterbalanced.org](http://www.smarterbalanced.org) and the CCSS Progression Documents.
Lesson 10: Use math drawings to represent additions with up to two compositions and relate drawings to the addition algorithm. (MP.6)

Lesson 11: Use math drawings to represent additions with up to two compositions and relate drawings to the addition algorithm. (MP.6)

Lesson 12: Choose and explain solution strategies and record with a written addition method. (MP.3)

By the end of Topic B, your students should be able to:
- Choose an efficient strategy and explain why it is efficient.
- Check work using the vertical method.
- Use math drawings to show solutions.

### 2.NBT.7 2.NBT.9

**C Strategies for Decomposing Tens and Hundreds Within 1,000**

1. Lesson 13: Relate manipulative representations to the subtraction algorithm, and use addition to explain why the subtraction method works. (MP.6)
2. Lessons 14: Use math drawings to represent subtraction with up to two decompositions, relate drawings to the algorithm, and use addition to explain why the subtraction method works. (MP.7)
3. Lesson 15: Use math drawings to represent subtraction with up to two decompositions, relate drawings to the algorithm, and use addition to explain why the subtraction method works. (MP.7)
4. Lesson 16: Subtract from multiples of 100 and from numbers with zero in the tens place. (MP.8)
5. Lesson 17: Subtract from multiples of 100 and from numbers with zero in the tens place. (MP.8)
6. Lesson 18: Apply and explain alternate methods for subtracting from multiples of 100 and from numbers with zero in the tens place. (MP.3)

### Days: 6

Remedial Lesson 14, use after Lesson 15 if needed. 15 is more structured and scaffolded.

Remedial Lesson 17, it has the same objective as Lesson 16. Keep Sprint from lesson 17.

By the end of Topic C, your students should be able to:

Snapshot Assessment 2.OA.1 Part B, Problem 3:
• Add multiples of 100 using math drawings, and the algorithm.
• Subtract from multiples of 100 using drawings, the algorithm, and addition to check for accuracy.

### Supporting Resources

<table>
<thead>
<tr>
<th>Foundational standards to support pre-requisite needs</th>
<th>Suggested Stations/Lessons/Games</th>
<th>Suggested Number Talks</th>
</tr>
</thead>
</table>
| 1.OA.3 Apply properties of operations as strategies to add and subtract. **Examples:** If 8 + 3 = 11 is known, then 3 + 8 = 11 is also known. (Commutative) | Small Group Stations:  
DNC Book 2: 2-1 “Snap-It”  
DNC Book 2: 2-2 “The Tub Game” | How many? ☺☺☺☺☺☺☺  
7 + 4 + 3 =? |
### 1.OA.4
Understand subtraction as an unknown-addend problem. For example, subtract 10 – 8 by finding the number that makes 10 when added to 8.

- DNC Book 2: 2-5 “The Cave Game"
- DNC Book 2: 3-13 “Counting Boards: How many ways?”
- DNC Book 2: 3-15 “Build a Floor”
- DNC Book 2: 3-16 “Apartment Buildings”
- DNC Book 2: 3-18 “What numbers can you make?”
- DNC Book 2: 3-26 “What’s Missing?”

1.NBT.5
Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used.

- Kindergarten Module 4; Topic E; Lessons 27-28
- Kindergarten Module 4; Topic F; Lesson 29
- DNC Book 2: 3-34 “2 Ten Shapes: + / - “
- DNC Book 2: 3-35 “A Ten Shape and More Subtraction”
- DNC Book 2: 3-37 “Wipe-Out”

1.NBT.6
Subtract multiples of 10 in the range 10-90 from multiples of 10 in the range 10-90 (positive or zero differences), 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 and explain the reasoning used.

- Kindergarten Module 5; Topic A; Lessons 4-5
- Kindergarten Module 5; Topic B; Lesson 6-9
- Kindergarten Module 5; Topic C; Lesson 11

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:

- 100 can be thought of as a bundle of ten tens—called a “hundred.”
- 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,

The furniture store sold 3 beds, 5 tables and 7 bookcases. How many pieces of furniture did the store sell in all?

- Kindergarten Module 5; Topic E; Lessons 27-28
- Kindergarten Module 4; Topic F; Lesson 29
- DNC Book 2: 3-34 “2 Ten Shapes: + / - “
- DNC Book 2: 3-35 “A Ten Shape and More Subtraction”
- DNC Book 2: 3-37 “Wipe-Out”
- Kindergarten Module 5; Topic A; Lessons 4-5
- Kindergarten Module 5; Topic B; Lesson 6-9
- Kindergarten Module 5; Topic C; Lesson 11

- Understanding Numbers: Place Value
  - Base Ten Pictures
  - Buildings
  - What’s It Worth?
  - Splitting Numbers: Understanding Numbers: Addition and Subtraction

- Write the numbers 1 - 1,000 on a blank hundreds grid. Use this resource to:
  - Skip count
  - When you count back from 201, what are the first 3 numbers that you say? 200, 199, 198.
  - The ultimate goal for second graders is to be able to count in multiple ways with no visual support.
<table>
<thead>
<tr>
<th>Module 5 Standards</th>
<th>Suggested Stations/Lessons/Games</th>
<th>Suggested Number Talks</th>
</tr>
</thead>
</table>
| **2.NBT.3** Read and write numbers to 1000 using base-ten numerals, number names, and expanded form. | • DNC Book 3, Chapter 1, Section A Understanding Regrouping - the Process and the Patterns | • Include base 10 blocks drawn and available for manipulation:  
  o 5 + 8 =  
  o 170 + 8 =  
  o 175 + 8 = |
| **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 + 6 =  
  • 20 + 60 = |

**Module 5 Standards**
- Major standards (areas of intensive focus) - underlined and bolded
- Supporting standards - (supports the major standards and is taught with major standards) - bolded
- Additional standards (does not connect to major work but is important to the progressions) italics

District 6 Priority Standards are highlighted

Use place value understanding and properties of operations to add and subtract.\(^2\)

**2.NBT.7** Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, and 1s and 10s.

\(^2\) The balance of this cluster is addressed in Modules 1 and 4.

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Greeley-Evans School District 6 Updated 6-6-16

2nd Grade

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tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.

This standard is taught in Module 4 and 5. This will be the last time this standard is taught.

2.NBT.8 Mentally add 10 or 100 to a given number 100-900, and mentally subtract 10 or 100 from a given number 100-900.

This standard is taught in Module 4 and 5. This will be the last time this standard is taught.

2.NBT.9 Explain why addition and subtraction strategies work, using place value and the properties of operations. (Explanations may be supported by drawings or objects.)

This standard is taught in Module 4 and 5. This will be the last time this standard is taught.

<table>
<thead>
<tr>
<th>Suggested Tools and Representations:</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>These are recommendations from ENY Module Overview</em></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chip Model</th>
<th>o Arrow notation, arrow way</th>
</tr>
</thead>
<tbody>
<tr>
<td>o Chip model (pictured below)</td>
<td></td>
</tr>
<tr>
<td>o Hide Zero cards</td>
<td></td>
</tr>
<tr>
<td>o Number bond</td>
<td></td>
</tr>
<tr>
<td>o Personal white boards</td>
<td></td>
</tr>
<tr>
<td>o Place value charts (pictured above to the right)</td>
<td></td>
</tr>
<tr>
<td>o Place value disk sets (19 ones, 19 tens, 10 hundreds, 1 one thousand per set)</td>
<td></td>
</tr>
<tr>
<td>o Tape diagram</td>
<td></td>
</tr>
</tbody>
</table>

Note: Students work through a progression of models to represent the addition and subtraction algorithm. Following the use of actual place value disks, students learn to draw the disks to represent numbers. This model provides an added level of support in that students write the value on each disk (pictured below to the left). Because the value is on the disk, there is no need to label the place value chart.

<table>
<thead>
<tr>
<th>2nd Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 - 5 = 3</td>
</tr>
<tr>
<td>80 - 50 = 30</td>
</tr>
<tr>
<td>4 + 2 = 6</td>
</tr>
<tr>
<td>40 + 20 = 60</td>
</tr>
<tr>
<td>400 + 200 = 600</td>
</tr>
</tbody>
</table>
Next, students learn the chip model, drawing dots on a labeled place value chart (pictured below to the right). While still pictorial, this model is more abstract because the value of the chip derives from its placement on the chart.

## 2nd Grade Module 6 Knowledge Packet
### Foundations of Multiplication and Division
2016-2017 Module Window: February 10th - March 8th

<table>
<thead>
<tr>
<th>Foundational standards to support pre-requisite needs</th>
<th>Examples of Standard</th>
</tr>
</thead>
</table>
| **1.OA.7** Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false. *For example, which of the following equations are true and which are false? 6 = 6, 7 = 8 - 1, 5 + 2 = 2 + 5, 4 + 1 = 5 + 2.* | Students need to know:  
- Meaning of the equal sign (Balance of the equation)  
- Basic facts  
- True and False meanings  
Mastery looks like:  
- Left side and right side are equal and balanced (the same as...)  
- Various representations of the equations |
| **2.NBT.2** Count within 1000; skip-count by 5s, 10s, and 100s. | Students need to know:  
- 99 to 100 is a change in place value (when counting my ones and skip counting)  
- Written representation  
- Movement in hundred chart  
- Counting with money (pennies, nickels, dimes, dollars)  
- Counting from variable starting points  
Mastery looks like:  
- Counting by 5’s, 10’s, 100’s  
- Manipulation of any number to skip count (example start at 34 and count by 10s) |
| **2.NBT.6** Add up to four two-digit numbers using strategies based on place value and properties of operations. | Students need to know:  
- Adding up to four two-digit numbers (within 200)  
- String of two digit numbers up to four  
- Could be a combination of one digit and two digit numbers  
- Grouping of numbers based on place value  
- Representations for grouping and adding  
Mastery looks like:  
- Adding with a place value strategy  
- Place value to decompose numbers |

---

Based on a work at [www.engageny.org](http://www.engageny.org), [www.smarterbalanced.org](http://www.smarterbalanced.org) and the CCSS Progression Documents.

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## Terminology

### New or Recently Introduced Terms
- Array (an arrangement of objects in rows and columns)
- Columns (the vertical groups in a rectangular array)
- Even number (a whole number whose last digit is 0, 2, 4, 6, or 8)
- Odd number (any number that is not even)
- Repeated addition (e.g., \(2 + 2 + 2\))
- Rows (the horizontal groups in a rectangular array)
- Tessellation (tiling of a plane using one or more geometric shapes with no overlaps and no gaps)
- Whole number (e.g., 0, 1, 2, 3...)

### Familiar Terms and Symbols
- Addends
- Doubles
- Equation
- Number path
- Number sentence
- Pair
- Rectangle
- Skip-counting
- Square
- Sum
- Tape diagram
- Total
- Unit

---

22 These are terms and symbols students have seen previously.

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Based on a work at [www.engageny.org](http://www.engageny.org), [www.smarterbalanced.org](http://www.smarterbalanced.org) and the CCSS Progression Documents.
## Module 6 Standards

| Major standards (areas of intensive focus) - underlined and bolded |
| Supporting standards - (supports the major standards and is taught with major standards) - bolded |
| Additional standards (doesn’t connect to major work but is important to the progressions) (italics). |
| District 6 Priority Standards are highlighted |

### Examples of Standard

**What do students need to know and be able to do? What does mastery of standard look like?**

<table>
<thead>
<tr>
<th>Students need to know:</th>
<th>Mastery looks like:</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Odd or even</td>
<td>Example: Is 8 an even number? Prove your answer.</td>
</tr>
<tr>
<td>- Pairing objects</td>
<td>Student 1: 5 grapes. I paired the 5 grapes into groups of 2. Since I didn’t have any groups left over, I know that 8 is an even number.</td>
</tr>
<tr>
<td>- Write an equation</td>
<td>Student 2: Covering on Error Problems: Instead of 13 minus 5, I added 1 to each of the numbers to make the problem 14 minus 4. I know that the answer is 8. So 13 minus 9 is 4.</td>
</tr>
<tr>
<td>- Meaning of equal addends</td>
<td>Student 3: I drew 6 circles. I matched one on the left with one on the right. Since they all match up, I know that 8 is an even number.</td>
</tr>
<tr>
<td>- Misconceptions: Students may look at the number of digits to see if it is odd or even or by using the first digit in the number instead of using the number in the ones.</td>
<td>Student 4: I drew 6 circles. I matched one on the left with one on the right. Since they all match up, I know that 8 is an even number.</td>
</tr>
</tbody>
</table>

**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.

This standard is only taught in this module.

**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.

This standard is only taught in this module.

**Reason with shapes and their attributes.**

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

This standard is only taught in this module.

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### Content Suggestions

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

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65

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The “must do” lessons were selected due to the math concept taught in the lesson, based on the EngageNY objective. Within these lessons, the objective is scaffolded from the fluency activities into the concept development and then practiced in the problem set. However, the “must do” lessons may not be perfect for you students. So, as you look at these “must do” lessons, customize the lessons around the math concept and your students. The “may do” lessons may be ways to reteach or extend the math concepts for your students. Don’t assume that they are an omit lesson. Use your understanding of the math concepts and your knowledge of what your students need to make the decision to use or omit the lesson.

Add Federal Way pacing in here, remove coloring, remove extra days for mid mod, move links to suggested activities, move Total Intr. Days to end, change link for Federal way, and snapshots, add MPs lesson by lesson

**Standards**

<table>
<thead>
<tr>
<th>2.OA.4</th>
<th>2.NBT.2</th>
<th>2.NBT.6</th>
</tr>
</thead>
</table>

**Topic and Objectives**

<table>
<thead>
<tr>
<th>A</th>
<th>Formation of Equal Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lesson 1: Use manipulatives to create equal groups. Use math drawing to represent equal groups, and relate to repeated addition. (MP.8)</td>
</tr>
<tr>
<td></td>
<td>Lesson 2: Use manipulatives to create equal groups. Use math drawing to represent equal groups, and relate to repeated addition. (MP.8)</td>
</tr>
<tr>
<td></td>
<td>Optional: Combine Lesson 1 &amp; 2</td>
</tr>
<tr>
<td></td>
<td>Lessons 3: Use math drawings and tape diagrams to represent equal groups, and relate to repeated addition. (MP.3)</td>
</tr>
<tr>
<td></td>
<td>Lesson 4: Use math drawings and tape diagrams to represent equal groups, and relate to repeated addition. (MP.4)</td>
</tr>
<tr>
<td></td>
<td>Optional: Combine Lesson 3 &amp; 4</td>
</tr>
</tbody>
</table>

**Days:** 2

In combining Lesson 1 & 2, use the concept development from Lesson 1 & 2, and the problem set from lesson 2.

In combining Lesson 3 & 4, do at least two examples from the concept development in Lesson 3. Relate the problems in Lesson 3 to the tape diagrams in Lesson 4. Use one page from each problem set.

By the end of Topic A, your students should be able to:

- Create equal groups of objects.
- Use drawings and tape diagrams to represent the groups
- Relate equal groups to repeated addition.

<table>
<thead>
<tr>
<th>B</th>
<th>Arrays and Equal Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lesson 5: Compose arrays from rows and columns, and count to find the total using objects. (MP.7)</td>
</tr>
<tr>
<td></td>
<td>Lesson 6: Decompose arrays into rows and columns, and relate to repeated addition. (MP.4)</td>
</tr>
<tr>
<td></td>
<td>Lesson 7: Represent arrays and distinguish rows and columns using math drawings. (MP.4)</td>
</tr>
</tbody>
</table>

**Days:** 4

Greeley-Evans School District 6 Updated 6-6-16

2nd Grade

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Lesson 8: Create arrays using square tiles with gaps. (MP.4)
Lesson 9: Solve word problems involving addition of equal groups in rows and columns. (MP.7)

By the end of Topic B, your students should be able to:
- Compose and decompose arrays with drawings or manipulatives.
- Relate arrays to repeated addition.
- Solve addition word problems using rows and columns.

1. Find the total number of mermaids and represent the sum in an equation. (DOK 1)

Lesson 9: Solve word problems involving addition of equal groups in rows and columns. (MP.7)

Consider using Lesson 8 as a station for concrete practice.

Lesson 10: Use square tiles to compose a rectangle, and relate to the array model. (MP.4)
Lesson 11: Use square tiles to compose a rectangle, and relate to the array model. (MP.3)
Lesson 12: Use math drawings to compose a rectangle with square tiles. (MP.3)
Lesson 13: Use square tiles to decompose a rectangle. (MP.7)
Lesson 14: Use scissors to partition a rectangle into same-size squares, and compose arrays with the squares. (MP.7)
Lesson 15: Use math drawings to partition a rectangle with square tiles, and relate to repeated addition. (MP.8)
Lesson 16: Use grid paper to create designs to develop spatial structuring. (MP.3)

By the end of Topic C, your students should be able to:
- Use tiles and math drawings to compose/decompose a rectangle without gaps or overlaps.

Lesson 11: Use square tiles to compose a rectangle, and relate to the array model. (MP.3)

Optional Lesson 11, it is an extension of Lesson 10. Students have more experience with this in Lesson 12 and 13.

Consider using Lesson 16 as a station.

Lesson 12: Use math drawings to compose a rectangle with square tiles. (MP.3)
Lesson 13: Use square tiles to decompose a rectangle. (MP.7)
Lesson 14: Use scissors to partition a rectangle into same-size squares, and compose arrays with the squares. (MP.7)
Lesson 15: Use math drawings to partition a rectangle with square tiles, and relate to repeated addition. (MP.8)
Lesson 16: Use grid paper to create designs to develop spatial structuring. (MP.3)

Days: 5

By the end of Topic C, your students should be able to:

By the end of Topic B, your students should be able to:

- Compose and decompose arrays with drawings or manipulatives.
- Relate arrays to repeated addition.
- Solve addition word problems using rows and columns.

1. Find the total number of mermaids and represent the sum in an equation. (DOK 1)

Lesson 9: Solve word problems involving addition of equal groups in rows and columns. (MP.7)

Consider using Lesson 8 as a station for concrete practice.

Lesson 10: Use square tiles to compose a rectangle, and relate to the array model. (MP.4)
Lesson 11: Use square tiles to compose a rectangle, and relate to the array model. (MP.3)
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Lesson 16: Use grid paper to create designs to develop spatial structuring. (MP.3)

By the end of Topic C, your students should be able to:
- Use tiles and math drawings to compose/decompose a rectangle without gaps or overlaps.

Lesson 11: Use square tiles to compose a rectangle, and relate to the array model. (MP.3)

Optional Lesson 11, it is an extension of Lesson 10. Students have more experience with this in Lesson 12 and 13.

Consider using Lesson 16 as a station.

Lesson 12: Use math drawings to compose a rectangle with square tiles. (MP.3)
Lesson 13: Use square tiles to decompose a rectangle. (MP.7)
Lesson 14: Use scissors to partition a rectangle into same-size squares, and compose arrays with the squares. (MP.7)
Lesson 15: Use math drawings to partition a rectangle with square tiles, and relate to repeated addition. (MP.8)
Lesson 16: Use grid paper to create designs to develop spatial structuring. (MP.3)
- Relate drawings to repeated addition.
- Use grids and diagrams to practice spatial reasoning.

1. Your teacher will give you a Post-It. Divide your Post-It into equal parts. Then stick it below.

2. Divide these rectangles into 2 rows and 4 columns.

Do these shapes both have the same number of sections? Explain.

---

### 2.OA.3 D The Meaning of Even and Odd Numbers

- Lesson 17: Relate doubles to even numbers, and write number sentences to express the sums. (MP.8)
- Lesson 18: Pair objects and skip-count to relate to even numbers. (MP.8)
- Lesson 19: Investigate the pattern of even numbers: 0, 2, 4, 6, and 8 in the ones place, and relate to odd numbers. (MP.8)
- Lesson 20: Use rectangular arrays to investigate odd and even numbers. (MP.8)

**Days: 4**

By the end of Topic D, your students should be able to:

**Snapshot Assessment 2.OA.3 Problems 1-4**

- Understands that doubles are even numbers
- Relates doubles to number sentences.
- Pairs objects to skip counting
- Determine whether a group has odd or even numbers by pairing the objects or skip counting.

---

**Total Instructional Days: 15** "Must do" Lessons in a 18 day window, giving opportunity to support foundational standards and go in depth with focus standards.
### Supporting Resources

<table>
<thead>
<tr>
<th>Foundational standards to support pre-requisite needs</th>
<th>Suggested Stations/Lessons/Games</th>
<th>Suggested Number Talks</th>
</tr>
</thead>
</table>
| 1.OA.7 Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false. *For example, which of the following equations are true and which are false? 6 = 6, 7 = 8 - 1, 5 + 2 = 2 + 5, 4 + 1 = 5 + 2.* | - Illustrative mathematics task: [https://www.illustrativemathematics.org/1.OA.D.7](https://www.illustrativemathematics.org/1.OA.D.7)  
- Write the numbers 1 - 1,000 on a blank hundreds grid. Use this resource to:  
  o Skip count  
  o When you count back from 201, what are the first 3 numbers that you say? 200, 199, 198.  
  o The ultimate goal for second graders is to be able to count in multiple ways with no visual support.  
- DNC Book 3, Chapter 1, Section A Understanding Regrouping - the Process and the Patterns  
- DNC Book 3, Chapter 1, Section 3: Addition and Subtraction of Two-Digit Numbers  
- Understanding Numbers: Addition and Subtraction Level 1: Working with Tens and Ones | 1 + 8 + 10 + 70 = |
| 2.NBT.2 Count within 1000; skip-count by 5s, 10s, and 100s. | | |
| 2.NBT.6 Add up to four two-digit numbers using strategies based on place value and properties of operations. | | |
### Module 6 Standards

<table>
<thead>
<tr>
<th>Major standards (areas of intensive focus)</th>
<th>Supporting standards (supports the major standards and is taught with major standards)</th>
<th>Additional standards (doesn’t connect to major work but is important to the progressions)</th>
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</thead>
<tbody>
<tr>
<td><strong>2.OA.3</strong> 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.</td>
<td>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.</td>
<td>2.G.2 Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.</td>
</tr>
</tbody>
</table>

This standard is **only taught in this module.**

### Suggested Stations/Lessons/Games

- Dice and ten frames to see if odd or even and prove
- Roll 2 dice and add them together to see odd and even
- Dominoes or cards to see if they are odd and even
- What’s in the Bag: count and identify odd and even
- Developing Number Concepts book 3: 149-158 (adjust to repeated addition instead of multiplication)
- Extension Problem Solving Task: The Wheel Shop

### Suggested Number Talks

- Number Talks could support AMC 7 and AMC 8. For example.
  - 8 + 7 = ___
  - 18 + 7 = ___
  - 28 + 7 = ___
  - 17 - 9 = ___
  - 27 - 9 = ___
  - 37 - 9 = ___
  - 9 + 6 = ___
  - 19 + 6 = ___
  - 39 + 6 = ___

---

24 2.G.2 is included in this module because the array model is so important to the foundation for multiplication. The balance of this cluster is addressed in Module 8.
2nd Grade Module 7 Knowledge Packet
Problem Solving with Length, Money, and Data
2016-2017 Module Window: March 9th - April 20th

Foundational standards to support pre-requisite needs

<table>
<thead>
<tr>
<th>Standard</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.MD.2</td>
<td>Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; 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 to contexts where the object being measured is spanned by a whole number of length units with no gaps or overlaps.</td>
</tr>
</tbody>
</table>

Examples of Standard
What do students need to know and be able to do? What does mastery of standard look like?

Asks students to use multiple copies of one object to measure a larger object. This concept is referred to as iteration. Through numerous experiences and careful questioning by the teacher, students will recognize the importance of making sure that there are not any gaps or overlaps in order to get an accurate measurement. This concept is a foundational building block for the concept of area in 3rd Grade.

Mastery looks like:
Ask students to use multiple units of the same object to measure the length of a pencil. (How many paper clips will it take to measure how long the pencil is?)
1. MD.4 Organize, represent, and interpret data with up to three categories; 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.

This standard calls for students to create graphs and tally charts using data relevant to their lives (e.g., categorical data--favorite ice cream, eye color, pets, etc.). Graphs may be constructed by groups of students as well as by individual students. Then, they work with the data by organizing, representing and interpreting data. Students should have experiences posing a question with 3 possible responses and then work with the data that they collect. Counting objects should be reinforced when collecting, representing, and interpreting data. Students describe the object graphs and tally charts they create. They should also ask and answer questions based on these charts or graphs that reinforce other mathematics concepts such as sorting and comparing. The data chosen or questions asked give students opportunities to reinforce their understanding of place value, identifying ten more and ten less, relating counting to addition and subtraction and using comparative language and symbols.

Mastery looks like:

Students pose a question and the 3 possible responses. Which is your favorite flavor of ice cream? Chocolate, vanilla or strawberry? Students collect their data by using tallies or another way of keeping track. Students organize their data by totaling each category in a chart or table.

<table>
<thead>
<tr>
<th>What is your favorite flavor of ice cream?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chocolate</td>
</tr>
<tr>
<td>Vanilla</td>
</tr>
<tr>
<td>Strawberry</td>
</tr>
</tbody>
</table>

2. OA.1 Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem. (See CCLS Glossary, Table 1.)

Students need to know:
- Extension of 1st grade, addition and subtraction up to 100
- Solving for unknown and finding what is missing
- One and two step word problems
- Unknown in all positions: Adding to, taking from, putting together, taking apart, comparing
- Visualization

Mastery looks like:
- Solve both steps in word problems adding and subtracting from whatever position
- Solving and explaining thinking
- RDW steps in problem solving
- EXPECT students to use place value blocks (base 10), number line, hundreds chart, etc. to show, solve and explain their reasoning. Just explaining by telling the steps of the procedure will not be enough. Students need to understand the operations and the process. Instead of asking for the “answer", say: “Using “the model,” “the relationships,” “the structure," or “justify your answer.”
<table>
<thead>
<tr>
<th>Standard</th>
<th>Description</th>
<th>Students need to know:</th>
<th>Mastery looks like:</th>
</tr>
</thead>
</table>
| 2.NBT.2  | Count within 1000; skip-count by 5s\(^\text{25}\), 10s, and 100s. | - 99 to 100 is a change in place value (when counting my ones and skip counting)  
- Written representation  
- Movement in hundred chart  
- Counting with money (pennies, nickels, dimes, dollars)  
- Counting from variable starting points | - Counting by 5’s, 10’s, 100’s  
- Manipulation of any number to skip count (example start at 34 and count by 10s) |
| 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. | This standard builds on the work of 2.NBT.1 and 2.NBT.3 by having students compare two numbers by examining the amount of hundreds, tens and ones in each number.  
Students are introduced to the symbols greater than (>), less than (<) and equal to (=) in First Grade, and use them in Second Grade with numbers within 1,000.  
Students should have ample experiences communicating their comparisons in words before using only symbols in this standard. | |
| 2.NBT.6  | Add up to four two-digit numbers using strategies based on place value and properties of operations. | Adding up to four two-digit numbers (within 200)  
String of two digit numbers up to four  
Could be a combination of one digit and two digit numbers  
Grouping of numbers based on place value  
Representations for grouping and adding | Adding with a place value strategy |

\(^{25}\) Use analog clock to provide a context for skip-counting by fives.

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Terminology

New or Recently Introduced Terms

- Bar graph (pictured to the right)
- Category (group of people or things sharing a common characteristic, e.g., bananas are in the fruit category)
- Data (a set of facts or pieces of information)
- Degree (used to measure temperature, e.g., degrees Fahrenheit)
- Foot (ft, unit of length equal to 12 inches)
- Inch (in, unit of length)
- Legend (notation on a graph explaining what symbols represent)
- Line plot (graphical representation of data—pictured to the right)
- Picture graph (representation of data like a bar graph, using pictures instead of bars—pictured to the right)
- Scale (a number line used to indicate the various quantities represented in a bar graph—pictured below to the right)
- Survey (collecting data by asking a question and recording responses)
- Symbol (picture that represents something else)
- Table (representation of data using rows and columns)
- Thermometer (tool used to measure temperature)
- Yard (yd, unit of length equal to 36 inches or 3 feet)
Familiar Terms and Symbols

- Benchmark (e.g., round numbers like multiples of 10)
- Centimeter (cm, unit of length measure)
- Cents (e.g., 5¢)
- Coins (e.g., penny, nickel, dime, and quarter)
- Compare
- Compose
- Decompose
- Difference
- Dollars (e.g., $2)
- Endpoint
- Equation
- Estimation (an approximation of the value of a quantity or number)
- Hash mark (the marks on a ruler or other measurement tool)
- Height
- Length
- Length unit
- Meter (m, unit of length measure)
- Meter strip, meter stick
- Number bond
- Number line (a line marked at evenly spaced intervals)
- Overlap (extend over or cover partly)
- Ruler
- Tally mark
- Tape diagram
- Unit
- Value

These are terms and symbols students have seen previously.
### Module 7 Standards

| Major standards (areas of intensive focus) - underlined and bolded | Supporting standards - (supports the major standards and is taught with major standards) - bolded | Additional standards-(doesn’t connect to major work but is important to the progressions) italics.

<table>
<thead>
<tr>
<th>Examples of Standard</th>
<th>What do students need to know and be able to do? What does mastery of standard look like?</th>
</tr>
</thead>
</table>

#### 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.

This standard was taught in Module 1 and 4. This will be the last time it is taught this year.

- **Student need to know:**
  - Extension of NBT 4, adding and subtraction within 100
  - Using place value strategy
  - Relationship between addition and subtraction
  - Various models/tools (base ten blocks, tape diagrams, number bonds, place value disks)

- **Mastery looks like:**
  - Effective strategy for addition or subtraction within 100
  - Correct answer (fluent)

#### Measure and estimate lengths in standard units.

**2.MD.1** Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.

This standard was taught in Module 2. This will be the last time it is taught this year.

- **Foundational understandings to help with measure concepts:**
  - Understand that larger units can be subdivided into equivalent smaller units (partition).
  - Understand that the same unit can be repeated to determine the measure (iteration).
  - Understand the relationship between the size of a unit and the number of units needed (compensatory principal).
  - Understand measuring two-dimensional space (area) using non-standard units. Students in second grade will build upon what they learned in first grade from measuring length with non-standard units to the new skill of measuring length in metric and U.S. Customary with standard units of measure.

- **Common Misconceptions:**
  - Some students might think that they can only measure lengths with a ruler starting at the left edge. Provide situations where the
ruler does not start at zero. For example, a ruler is broken and the first inch number that can be seen is 2. If a pencil is measured and it is 9 inches on this ruler, the students must subtract 2 inches from the 9 inches to adjust for where the measurement started. Some students become confused when the ruler they are using have both customary and metric measures on it. By covering on scale with masking tape the student becomes less confused.

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.

This standard was taught in Module 2. This will be the last time it is taught this year.

This standard calls for students to measure an object using two units of different lengths. Concentrate on the “spaces” for the units and not the marks on the rulers.

Example of mastery:

b. Use a ruler to measure the length of the items above using inches and then centimeters. Round to the nearest unit, and then record the measurements in the table.

<table>
<thead>
<tr>
<th>Envelope</th>
<th>Pencil</th>
<th>Crayon</th>
<th>Scissors</th>
</tr>
</thead>
</table>

A student measures the length of their desk and finds that it is 3 feet and 36 inches.

Examples:
- Students measure the length of the same object using different tools (ruler with inches, ruler with centimeters, a yardstick, or meter stick). This will help students learn which tool is more appropriate for measuring a given object.
- They describe the relationship between the size of the measurement unit and the number of units needed to measure something. For instance, a student might say, “The longer the unit, the fewer I need.”

2.MD.3 Estimate lengths using inches, feet, centimeters, and meters.

This standard was taught in Module 2. This will be the last time it is taught this year.

This standard calls for students to estimate the lengths of objects using inches, feet, centimeters, and meters. Students should make estimates after seeing a benchmark unit, such as the length of one inch, before making their estimate.

Example:
- Students need to figure out visual benchmarks on their bodies that help them identify about an inch, foot, cm, etc.

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.

This standard was taught in Module 2. This will be the last time it is taught this year.

This standard calls for students to determine the difference in length between two objects. Students should choose objects, identify appropriate tools and units, measure both objects, and then determine the differences in lengths using the same unit of measure.

Students should use comparative phrases such as “It is longer by 2 inches” or “It is shorter by 5 centimeters” to describe the difference between two objects.

2.MD.5 Use addition and subtraction within 100

This standard applies the concept of length to solve addition and subtraction word problems with numbers within 100. Students must use the same unit in these problems and discuss why it doesn’t work to use different units of measure.
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.

This standard was taught in Module 2. This will be the last time it is taught this year.

Example: In P.E. class Kate jumped 14 inches. Mary jumped 23 inches. How much farther did Mary jump than Kate? Write an equation and then solve the problem.

Common Misconceptions: Help students develop and understanding of what the problem is asking. Sometimes “key words” can be misleading. The teaching of a “key word approach” limits the development of understanding what the problems is actually asking.

Example of Mastery:

This standard calls for the student to create number lines within 100 to solve addition and subtraction problems. Students should create the number line with evenly spaced points corresponding to the numbers.

Examples:

Work with time and money.

2.MD.8 Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using drawings and equations with a symbol for the unknown number to represent the problem.

This standard calls for students to solve word problems involving dollar bills, quarters, dimes, nickels, and pennies.

Example of Mastery:
using $ and ¢ symbols appropriately.

**Example:** If you have 2 dimes and 3 pennies, how many cents do you have?

This standard is only taught in this module.

---

to solve word problems involving either dollars or cents.

Since students have not been introduced to decimals, problems should either have only dollars or only cents.

Since money is not specifically addressed in kindergarten, first grade, or third grade, students should have multiple opportunities to identify, count, recognize, and use coins and bills in and out of context.

**Example:**

Sandra went to the store and received 76¢ in change. What are three different sets of coins she could have received?

**Common Misconceptions:**

Sometimes students will record twenty-nine dollars as 29$. Remind them that the dollar sign goes in front. The cent sign goes after the number and there is no decimal point used with the cent sign nor can both signs be used in the same amount.

Students might over-generalize the value of coins when they count them. They might count them as individual objects. Also some students think that the value of a coin is directly related to its size, so the bigger the coin, the more it is worth.

---

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.

This standard is only taught in this module.

---

This standard calls for students to represent the length of several objects by making a line plot. Students should round their lengths to the nearest whole unit.

**Example:** Measure objects in your desk to the nearest inch, display data collected on a line plot. How many objects measured 2 inches? 3 inches? Which length had the most number of objects? How do you know?

This standard emphasizes representing data using a line plot. Students will use the measurement skills learned in earlier standards to measure objects. Line plots are first introduced in this grade level.

A line plot can be thought of as plotting data on a number line.

**Example of Mastery:**

da. Draw and label a line plot to show the length of the pencils in the table.

<table>
<thead>
<tr>
<th>Length in inches</th>
<th>Number of Pencils</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 inch</td>
<td>0</td>
</tr>
<tr>
<td>2 inches</td>
<td>2</td>
</tr>
</tbody>
</table>

---

Greeley-Evans School District 6 Updated 6-6-16

2nd Grade

Modified from Pacing Guides by FWPS which are licensed under a Creative Commons Attribution-NonCommercial 4.0 International License. Based on a work at www.engageny.org, www.smarterbalanced.org and the CCSS Progression Documents.
Common Misconceptions:
The attributes for the same kind of object can vary. This will cause equal values in an object graph to appear unequal. For example, when making an object graph using shoes for boys and girls, five adjacent boy shoes would likely appear longer than five adjacent girl shoes. To standardize the objects, place the objects on the same-sized construction paper or sticky-note, then make the object graph.

2.MD.10 Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph.

This standard calls for students to work with categorical data by organizing, representing and interpreting data. Students should have experiences posing a question with 4 possible responses and then work with the data that they collect.

Second Graders should draw both horizontal and vertical bar graphs. Bar Graphs include a title, scale, scale label, category label and data.

Example of Mastery:
c. Draw and label a bar graph to show the number of pencils in each student’s desk.

<table>
<thead>
<tr>
<th>Student Name</th>
<th>Jill</th>
<th>Swan</th>
<th>Roeco</th>
<th>Lyla</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Pencils</td>
<td>4</td>
<td>2</td>
<td>5</td>
<td>1</td>
</tr>
</tbody>
</table>

Title: _____________________________

Content Suggestions

The “must do” lessons were selected due to the math concept taught in the lesson, based on the EngageNY objective. Within these lessons, the objective is scaffolded from the fluency activities into the concept development and then practiced in the problem set. However, the “must do” lessons may not be perfect for you students. So, as you look at these “must do” lessons, customize the lessons around the math concept and your students. The “may do” lessons may be ways to reteach or extend the math concepts for your students. Don’t assume that they are an omit lesson. Use your understanding of the math concepts and your knowledge of what your students need to make the decision to use or omit the lesson.

Key:
- “Must do” Lessons (Focuses on the standard in depth)
- “May do” Lessons (Based on student needs)
<table>
<thead>
<tr>
<th>Standards</th>
<th>Topic and Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.MD.10</td>
<td>Problem Solving with Categorical Data</td>
</tr>
<tr>
<td>2.MD.6</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lesson 1: Sort and record data into a table using up to four categories; use category counts to solve word problems. (MP.1)</td>
</tr>
<tr>
<td></td>
<td>Lesson 2: Draw and label a picture graph to represent data with up to four categories. (MP.4)</td>
</tr>
<tr>
<td></td>
<td>Lesson 3: Draw and label a bar graph to represent data; relate the count scale to the number line. (MP.6)</td>
</tr>
<tr>
<td></td>
<td>Lesson 4: Draw a bar graph to represent a given data set. (MP.6)</td>
</tr>
<tr>
<td></td>
<td>Lesson 5: Solve word problems using data presented in a bar graph. (MP.6)</td>
</tr>
<tr>
<td></td>
<td>Teach lessons 3, 4, and 5 for two days.</td>
</tr>
</tbody>
</table>

**Days: 4**

**Lessons 3, 4, and 5** are very similar lessons. Teach for 2 days and select parts that your students need.

**Lesson 5**, Activity 3 could be done as a collaborative poster in small groups.

---

<table>
<thead>
<tr>
<th>Standards</th>
<th>Topic and Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.NBT.5</td>
<td>Problem Solving with Coins and Bills</td>
</tr>
<tr>
<td>2.MD.8</td>
<td></td>
</tr>
<tr>
<td>2.NBT.2</td>
<td></td>
</tr>
<tr>
<td>2.NBT.6</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lesson 6: Recognize the value of coins and count up to find their total value. (MP.4)</td>
</tr>
<tr>
<td></td>
<td>Lesson 7: Solve word problems involving the total value of a group of coins. (MP.2)</td>
</tr>
<tr>
<td></td>
<td>Lesson 8: Solve word problems involving the total value of a group of bills. (MP.2)</td>
</tr>
<tr>
<td></td>
<td>Lesson 9: Solve word problems involving different combinations of coins with the same total value. (MP.6)</td>
</tr>
<tr>
<td></td>
<td>Lesson 10: Use the fewest number of coins to make a given value. (MP.2)</td>
</tr>
<tr>
<td></td>
<td>Lesson 11: Use different strategies to make $1 or make change from $1. (MP.1)</td>
</tr>
<tr>
<td></td>
<td>Lesson 12: Solve word problems involving different ways to make change from $1. (MP.1)</td>
</tr>
<tr>
<td></td>
<td>Lesson 13: Solve two-step word problems involving dollars or cents with totals within $100 or $1. (MP.1)</td>
</tr>
</tbody>
</table>

**Days: 8**

Since money is not specifically addressed in kindergarten, first grade, or third grade, students should have multiple opportunities to identify, count, recognize, and use coins and bills in and out of context.

---

Add Federal Way pacing in here, remove coloring, remove extra days for mid mod, move links to suggested activities, move Total Instr. Days to end, change link for Federal way, and snapshots, add MPs lesson by lesson.

By the end of Topic A, your students should be able to:

- Sort and record data into a table
- Draw and label a picture graph and bar graph
- Represent a data set of up to four categories.
- Solve addition and subtraction word problems using information from graphs.
- Compare problems using information from graphs.
By the end of Topic B, your students should be able to:

- Recognize coin values
- Solve two-step word problems involving coins and bills.
- Use the fewest number of coins to make a given value.
- Use different ways to make change from $1.

### 2.MD.1 C

**Creating an Inch Ruler**

- Lesson 14: Connect measurement with physical units by using iteration with an inch tile to measure. (MP.6)
- Lesson 15: Apply concepts to create inch rulers; measure lengths using inch rulers. (MP.2)

### Days: 0

In module 2, students created a centimeter ruler. This may need to be reviewed, but if pacing is a concern these lessons could be optional. Consider teaching part of Lesson 15 as an intro to Lesson 16. Use tiles in Lesson 15 for more concrete experiences.

By the end of Topic C, your students should be able to:

- Understand that the zero point on a ruler is the beginning of the total length.
- Measure lengths using inch rulers.

### Snapshot Assessment 2.MD.3 Part B

Estimate the length of each of these objects. Then, measure the objects you found.

<table>
<thead>
<tr>
<th>Item</th>
<th>Estimated Length</th>
<th>Actual Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>(shorter)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(shorter)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(same length)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(longer)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(longer)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Days: 4

Lesson 17: Review the metric mental benchmarks from Module 2.

---

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By the end of Topic D, your students should be able to:

- Measure lengths of objects twice using different units. Describe how the measurements relate to each other.
- Estimate lengths using different strategies.
- Compare measurements lengths.
- Measure two objects and find the difference of lengths.

**Snapshot Assessment 2.MD.4 Problems 1-3**

1. Measure and label the length of each side of the triangle using your ruler.

   ![Triangle Diagram]

2. Measure the length of each line and compare.
   - Line M
   - Line N
   - Line O

   Line M is about ____ inches longer than Line O.

3. Ben took two different ways home from school to see which way was the quickest. All streets on Route A are the same length. All streets on Route B are the same length.

   ![Route Diagram]

Days: 3

---

By the end of Topic E, your students should be able to:

- Solve addition word problems using length.
- Represent number as lengths on a number line.
- Represent sums and differences as lengths on a number line.

**Snapshot Assessment 2.MD.6 Problems 1 and 2**

1. Represent 61 - 25 on this number line.

   ![Number Line]

2. Kate solved 26 – 18 using this number line.

   Antares said she was wrong. What was Kate's error?

Days: 3

---

### Problem Solving with Customary and Metric Units

- **Lesson 20:** Solve two-digit addition and subtraction word problems involving length by using tape diagrams and writing equations to represent the problem. (MP.1)
- **Lesson 21:** Identify unknown numbers on a number line diagram by using the distance between numbers and reference points. (MP.2)
- **Lesson 22:** Represent two-digit sums and differences involving length by using the ruler as a number line. (MP.6)

Days: 3

---

### Displaying Measurement Data

- **Lesson 23:** Collect and record measurement data in a table; answer questions and summarize the data set. (MP.5)
- **Lesson 24:** Draw a line plot to represent the measurement data; relate the measurement scale to the number line. (MP.4)
- **Lesson 25:** Draw a line plot to represent a given data set; answer questions and draw conclusions.

Days: 3

---

Greeley-Evans School District 6 Updated 6-6-16

2nd Grade

---

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By the end of Topic F, your students should be able to:
- Collect, record, draw data in tables.
- Show the measurements by making a line plot.
- Answer questions about data
- Summarize data sets.

**Total Instructional Days:** 22 “Must do” Lessons in a 26 day window, giving opportunity to support foundational standards and go in depth with focus standards.

### Supporting Resources

<table>
<thead>
<tr>
<th>Foundational standards to support pre-requisite needs</th>
<th>Suggested Stations/Lessons/Games</th>
<th>Suggested Number Talks</th>
</tr>
</thead>
</table>
| 1.MD.2: Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; 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 to contexts where the object being measured is spanned by a whole number of length units with no gaps or overlaps.** | **Teaching Children Mathematics:**  
- 1.MD.2: Van de Walle, Volume 1, Chapter 8  
- EngageNY 1st Grade Module 3: Topics A-C | Number talks in 2nd grade should continue to focus on Addition and Subtraction |
| 1.MD.4: Organize, represent, and interpret data with up to three categories; 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. | **Teaching Children Mathematics:**  
- 1.MD.4: Van de Walle, Volume 1, Chapter 7  
- EngageNY 1st Grade Module 3: Topics A-C | |
| 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, | **Small Group Instruction:**  
- DNC Book 3, Chapter 1, Section C  
- Van de Walle, Volume 1, Chapter 5 and 6 | |
<table>
<thead>
<tr>
<th><strong>2.NBT.2</strong></th>
<th><strong>Problem Solving Tasks:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Count within 1000; skip-count by 5s, 10s, and 100s.</td>
<td>Illustrative Mathematics - A Pencil and a Sticker: <a href="https://www.illustrativemathematics.org/content-standards/tasks/1">https://www.illustrativemathematics.org/content-standards/tasks/1</a></td>
</tr>
<tr>
<td><strong>Whole Class / Small Group Activities:</strong></td>
<td>Use drawings and equations with a symbol for the unknown number to represent the problem. (See CCLS Glossary, Table 1.)</td>
</tr>
<tr>
<td>Write the numbers 1 - 1,000 on a blank hundreds grid. Use this resource to:</td>
<td></td>
</tr>
<tr>
<td>o Skip count</td>
<td></td>
</tr>
<tr>
<td>o When you count back from 201, what are the first 3 numbers that you say? 200, 199, 198.</td>
<td></td>
</tr>
<tr>
<td>o The ultimate goal for second graders is to be able to count in multiple ways with no visual support.</td>
<td></td>
</tr>
<tr>
<td><strong>Small Group Activities:</strong></td>
<td></td>
</tr>
<tr>
<td>DNC Book 3, Chapter 1, Section A Understanding Regrouping - the Process and the Patterns</td>
<td></td>
</tr>
<tr>
<td>Van de Walle, Volume 1, Chapter 5, Activities 10, 20</td>
<td></td>
</tr>
<tr>
<td><strong>Problem Solving Tasks:</strong></td>
<td></td>
</tr>
<tr>
<td>Illustrative Mathematics task, Saving Money: <a href="https://www.illustrativemathematics.org/content-standards/tasks/1309">https://www.illustrativemathematics.org/content-standards/tasks/1309</a></td>
<td></td>
</tr>
<tr>
<td><strong>2.NBT.4</strong></td>
<td><strong>Small Group Activities:</strong></td>
</tr>
<tr>
<td>Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using &gt;, =, and &lt; symbols to record the results of comparisons.</td>
<td>DNC Book 1, Chapter 3</td>
</tr>
<tr>
<td><strong>Small Group Activities:</strong></td>
<td></td>
</tr>
<tr>
<td>DNC Book 3, Chapter 1, Section 3: Addition and Subtraction of Two-Digit Numbers</td>
<td></td>
</tr>
<tr>
<td>Understanding Numbers: Addition and Subtraction Level 1: Working with Tens and Ones</td>
<td></td>
</tr>
</tbody>
</table>

---

27 Use analog clock to provide a context for skip-counting by fives.

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Based on a work at [www.engageny.org](http://www.engageny.org), [www.smarterbalanced.org](http://www.smarterbalanced.org) and the CCSS Progression Documents.
### Module 7 Standards

**Major standards (areas of intensive focus)** - underlined and bolded

**Supporting standards** - supports the major standards and is taught with major standards - bolded

**Additional standards** - (doesn't connect to major work but is important to the progressions) *italics.*

*District 6 Priority Standards are highlighted*

<table>
<thead>
<tr>
<th>Suggested Stations/Lessons/Games</th>
<th>Suggested Number Talk Talks</th>
</tr>
</thead>
</table>

#### 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.

This standard was taught in Module 1 and 4. This will be the last time it is taught this year.

**Small Group Instruction:**
- DNC Book 3, Chapter 1, Section 3: Addition and Subtraction of Two-Digit Numbers
- Understanding Numbers: Addition and Subtraction Level 1: Working with Tens and Ones

**Various MD standards:**

**Number talks in 2nd grade should continue to focus on Addition and Subtraction.**

2.NBT.5:
- 2 + 25 =
- 12 + 25 =
- 16 + 8 =
- ___ + 7 = 16 + 8
- 11 - 7 =
- 21 - 7 =

#### 2.MD.1: Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.

This standard was taught in Module 2. This will be the last time it is taught this year.

**Various MD standards:**

**Web Resources:**
- [Broken ruler lesson](http://mrnussbaum.com/second-grade-measurement-and-data)

#### 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.

This standard was taught in Module 2. This will be the last time it is taught this year.

**Various MD standards:**
<table>
<thead>
<tr>
<th>Standard</th>
<th>Description</th>
<th>Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.MD.3</td>
<td>Estimate lengths using inches, feet, centimeters, and meters. This standard was taught in Module 2. This will be the last time it is taught this year.</td>
<td><a href="http://mrnussbaum.com/second-grade-measurement-and-data">http://mrnussbaum.com/second-grade-measurement-and-data</a></td>
</tr>
<tr>
<td>2.MD.4</td>
<td>Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit. This standard was taught in Module 2. This will be the last time it is taught this year.</td>
<td><a href="http://mrnussbaum.com/second-grade-measurement-and-data">http://mrnussbaum.com/second-grade-measurement-and-data</a>, <a href="https://www.learnzillion.com">Learn Zillion: Multiple Object Length Comparison</a></td>
</tr>
<tr>
<td>2.MD.5</td>
<td>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. This standard was taught in Module 2. This will be the last time it is taught this year.</td>
<td><a href="http://mrnussbaum.com/second-grade-measurement-and-data">http://mrnussbaum.com/second-grade-measurement-and-data</a></td>
</tr>
<tr>
<td>2.MD.6</td>
<td>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. This standard was taught in Module 2. This will be the last time it is taught this year.</td>
<td><a href="http://mrnussbaum.com/second-grade-measurement-and-data">http://mrnussbaum.com/second-grade-measurement-and-data</a></td>
</tr>
<tr>
<td>2.MD.8</td>
<td>Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ symbols appropriately. Example: If you have 2 dimes and 3</td>
<td><a href="http://mrnussbaum.com/second-grade-measurement-and-data">http://mrnussbaum.com/second-grade-measurement-and-data</a></td>
</tr>
<tr>
<td>Small Group Activities:</td>
<td></td>
<td>EDM Coin Top It</td>
</tr>
<tr>
<td>pennies, how many cents do you have?</td>
<td>• Van de Walle, Volume 1, Chapter 5, Activities 28-31</td>
<td></td>
</tr>
<tr>
<td>-------------------------------------</td>
<td>-------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>This standard is only taught in this module.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Represent and interpret data.</td>
<td>Various MD standards:</td>
<td></td>
</tr>
<tr>
<td>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.</td>
<td>• <a href="http://mrnussbaum.com/second-grade-measurement-and-data">http://mrnussbaum.com/second-grade-measurement-and-data</a></td>
<td></td>
</tr>
<tr>
<td>This standard is only taught in this module.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>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.</td>
<td>Various MD standards:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Suggested Tasks:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Student game for enrichment - <a href="http://mrnussbaum.com/second-grade-measurement-and-data">Fair Games Level B</a></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Problem solving task for remediation and/or assessment: <a href="http://mrnussbaum.com/second-grade-measurement-and-data">Our Pets</a></td>
<td></td>
</tr>
<tr>
<td>This standard is only taught in this module.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Suggested Tools and Representations:**

- Bar graph
- Centimeter cube
- Centimeter ruler
- Dice
- Grid paper
- Inch and centimeter ruler
- Inch tiles

*These are recommendations from ENY Module Overview*

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Greeley-Evans School District 6 Updated 6-6-16

2nd Grade

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2nd Grade **Module 8** Knowledge Packet
Time, Shapes, and Fractions as Equal Parts of Shapes
2016-2017  Module Window:  April 21st- May 24th

<table>
<thead>
<tr>
<th>Foundational standards to support pre-requisite needs</th>
<th>Examples of Standard</th>
</tr>
</thead>
</table>
| 1.MD.3  Tell and write time in hours and half-hours using analog and digital clocks. Recognize and identify coins, their names, and their values. | This standard asks students to read both analog and digital clocks and then orally tell and write the time. Times should be limited to the hour and the half-hour.  
Students need experiences exploring the idea that when the time is at the half-hour the hour hand is between numbers and not on a number. Further, the hour is the number before where the hour hand is. For example, in the clock below, the time is 8:30. The hour hand is between the 8 and 9, but the hour is 8 since it is not yet on the 9.  
The idea of 30 being “halfway” is difficult for students to grasp. Students can write the numbers from 0 - 60 counting by tens on a sentence strip. Fold the paper in half and determine that halfway between 0 and 60 is 30. A number path on an interactive whiteboard may also be used to demonstrate this. |
| 1.G.1 | Distinguish between defining attributes (e.g., triangles are closed and three-sided) versus non-defining attributes (e.g., color, orientation, overall size); build and draw shapes to possess defining attributes. |

Students need to experience a progression of activities for learning how to tell time. Begin by using a one-handed clock to tell times in hour and half-hour intervals, then discuss what is happening to the unseen big hand. Next use two real clocks, one with the minute hand removed, and compare the hands on the clocks. Students can predict the position of the missing big hand to the nearest hour or half-hour and check their prediction using the two-handed clock. They can also predict the display on a digital clock given a time on a one- or two-handed analog clock and vice-versa.

Students compose and decompose plane or solid figures (e.g., put two triangles together to make a quadrilateral) and build understanding of part-whole relationships as well as the properties of the original and composite shapes. As they combine shapes, they recognize them from different perspectives and orientations, describe their geometric attributes, and determine how they are alike and different, to develop the background for measurement and for initial understandings of properties such as congruence and symmetry.

This standard calls for students to determine which attributes of shapes are defining compared to those that are non-defining. Defining attributes are attributes that must always be present. Non-defining attributes are attributes that do not always have to be present. The shapes can include triangles, squares, rectangles, and trapezoids.

Examples:
- List two things that are the same and two things that are different between a triangle and a cube.
- Given a circle and a sphere, students identify the sphere as being three-dimensional but both are round.
- Given a trapezoid, find another two-dimensional shape that has two things that are the same.

Example:
All triangles must be closed figures and have 3 sides. These are defining attributes.
Triangles can be different colors, sizes and be turned in different directions, so these are non-defining.

Attributes refer to any characteristic of a shape. Students use attribute language to describe a given two-dimensional shape: number of sides, number of vertices/points, straight sides, closed. A child might describe a triangle as “right side up” or “red.” These attributes are not defining because they are not relevant to whether a shape is a triangle or not. Students should articulate ideas such as, “A triangle is a triangle because it has three straight sides and is closed.”

It is important that students are exposed to both regular and irregular shapes so that they can communicate defining attributes. Students should attend to precision and use attribute language to describe why these shapes are not triangles.
Students should also use appropriate language to describe a given three-dimensional shape: number of faces, number of vertices/points, and number of edges.
1.G.2  Compose two-dimensional shapes (rectangles, squares, trapezoids, triangles, half-circles, and quarter-circles) or three-dimensional shapes (cubes, right rectangular prisms, right circular cones, and right circular cylinders) to create a composite shape, and compose new shapes from the composite shape. (Students do not need to learn formal names such as “right rectangular prism.”)

The ability to describe, use and visualize the effect of composing and decomposing shapes is an important mathematical skill. It is not only relevant to geometry, but is related to children's ability to compose and decompose numbers.

Examples:
- Show the different shapes that you can make by joining a triangle with a square.
- Show the different shapes you can make joining a trapezoid with a half-circle.
- Show the different shapes you can make with a cube and a rectangular prism.
1.G.3 Partition circles and rectangles into two and four equal shares, describe the shares using the words *halves*, *fourths*, and *quarters*, and use the phrases *half of*, *fourth of*, and *quarter of*. Describe the whole as two of, or four of the shares. Understand for these examples that decomposing into more equal shares creates smaller shares.

This is the first time students begin partitioning regions into equal shares using a context such as cookies, pies, pizza, etc. This is a foundational building block of fractions, which will be extended in future grades. Students should have ample experiences using the words, *halves*, *fourths*, and *quarters*, and the phrases *half of*, *fourth of*, and *quarter of*. Students should also work with the idea of the whole, which is composed of two halves, or four fourths or four quarters.

**Example of Mastery:**

5. a. Draw one line to make this rectangle into two squares that are the same size.

b. Circle the words that make the sentence true.

One square makes up (one half / one quarter) of the rectangle above.

2.NBT.2 Count within 1000; skip-count by 5s\(^3\), 10s, and 100s.

**Students need to know:**
- 99 to 100 is a change in place value (when counting my ones and skip counting)
- Written representation
- Movement in hundred chart
- Counting with money (pennies, nickels, dimes, dollars)
- Counting from variable starting points

**Mastery looks like:**
- Counting by 5’s, 10’s, 100’s
- Manipulation of any number to skip count (example start at 34 and count by 10s)

---

\(^3\) Use analog clock to provide a context for skip-counting by fives.

Greeley-Evans School District 6 Updated 6-6-16

Modified from Pacing Guides by FWPS which are licensed under a Creative Commons Attribution-NonCommercial 4.0 International License. Based on a work at www.engageny.org, www.smarterbalanced.org and the CCSS Progression Documents.
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.

Student need to know:
- Extension of NBT 4, adding and subtracting within 100
- Using place value strategy
- Relationship between addition and subtraction
- Various models/tools (base ten blocks, tape diagrams, number bonds, place value disks)

Mastery looks like:
- Effective strategy for addition or subtraction within 100
- Correct answer (fluently)

Adding and subtracting fluently refers to knowledge of procedures, knowledge of when and how to use them appropriately, and skill in performing them flexibly, accurately, and efficiently.

Addition strategies based on place value for 48 + 37 may include:
- Adding by place value: 40 + 30 = 70 and 8 + 7 = 15 and 70 + 15 = 85.
- Incremental adding (breaking one number into tens and ones): 48 + 10 = 58, 58 + 10 = 68, 68 + 10 = 78, 78 + 7 = 85
- Compensation (making a friendly number): 48 + 2 = 50, 37 - 2 = 35, 50 + 35 = 85

Subtraction strategies based on place value for 81 - 37 may include:
- Adding up (from smaller number to larger number): 37 + 3 = 40, 40 + 40 = 80, 80 + 1 = 81, and 3 + 40 + 1 = 44.
- Incremental subtracting: 81 - 10 = 71, 71 - 10 = 61, 61 - 10 = 51, 51 - 7 = 44
- Subtracting by place value: 81 - 30 = 51, 51 - 7 = 44

Properties that students should know and use are:
- Commutative property of addition (Example: 3 + 5 = 5 + 3)
- Associative property of addition (Example: (2 + 7) + 3 = 2 + (7+3))
- Identity property of 0 (Example: 8 + 0 = 8)
### 2.NBT.6 Add up to four two-digit numbers using strategies based on place value and properties of operations.

**Student need to know:**
- Adding up to four two-digit numbers (within 200)
- String of two digit numbers up to four
- Could be a combination of one digit and two digit numbers
- Grouping of numbers based on place value
- Representations for grouping and adding

**Mastery looks like:**
- Adding with a place value strategy
- Place value to decompose numbers

**Explanation and Examples:**
This standard calls for students to add a string of two-digit numbers (up to four numbers) by applying place value strategies and properties of operations.

**Example:**

\[43 + 34 + 57 + 24 = \]

<table>
<thead>
<tr>
<th>Student 1 - Associative Property</th>
<th>Student 2 - Place Value Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>I saw the 43 and 57 and added them first, since I know 3 plus 7 equals 10. When I added them 100 was my answer. Then I added 34 and had 134. Then I added 24 and had 158.</td>
<td>I broke up all of the numbers into tens and ones. First I added the tens. 40 + 30 + 50 + 20 = 140. Then I added the ones. 3 + 4 + 7 + 4 = 18. Then I combined the tens and ones and had 158 as my answer.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Student 3 - Place Value Strategies and Associative Property</th>
<th>Student 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>I broke up all the numbers into tens and ones. First I added the tens. 40 + 30 + 50 + 20. I changed the order of the numbers to make adding easier.</td>
<td>I added up the ones. 3 + 4 + 7 + 4. I changed the order of the numbers to make adding easier. I know that 3 plus 7 equals 10 and 4 plus 4 equals 8. 10 plus 8 equals 18. I then combined my tens and my ones. 140 plus 18 equals 158.</td>
</tr>
</tbody>
</table>

Students demonstrate addition strategies with up to four two-digit numbers either with or without regrouping. Problems may be written in a story problem format to help develop a stronger understanding of larger numbers and their values. Interactive whiteboards and document cameras may also be used to model and justify student thinking.

### 2.MD.1 Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes

This standard calls for students to measure the length of objects in both customary (inches and feet) and metric (centimeters and meters). Students should have ample experiences choosing objects, identifying the appropriate tool and unit, and then measuring the object. The teacher should allow students to determine which tools and units to use.

**Foundational understandings to help with measure concepts:**
- Understand that larger units can be subdivided into equivalent smaller units (partition).
- Understand that the same unit can be repeated to determine the measure (iteration).
- Understand the relationship between the size of a unit and the number of units needed (compensatory principal).
- Understand measuring two-dimensional space (area) using non-standard units. Students in second grade will build upon what they learned in first grade from measuring length with non-standard units to the new skill of measuring length in metric and U.S. Customary with standard units of measure.

Ask students questions such as: “Do you start at the end of the ruler or at the zero?” helps them focus on where to start on the
instrument. They ask them: “Why do we have to start at the zero?” and “Are we looking at the spaces or the tic marks on the rulers?”

**Common Misconceptions:**
Some students might think that they can only measure lengths with a ruler starting at the left edge. Provide situations where the ruler does not start at zero. For example, a ruler is broken and the first inch number that can be seen is 2. If a pencil is measured and it is 9 inches on this ruler, the students must subtract 2 inches from the 9 inches to adjust for where the measurement started. Some student become confused when the ruler they are using have both customary and metric measures on it. By covering on scale with masking tape the student becomes less confused.

### Terminology

#### New or Recently Introduced Terms
- a.m./p.m.
- Analog clock
- Angle (e.g., figure formed by the corner of a polygon)
- Digital clock
- Parallel (two lines on the same plane are parallel if they do not intersect)
- Parallelogram (quadrilateral with both pairs of opposite sides parallel)
- Polygon (closed figure with three or more straight sides, e.g., triangle, quadrilateral, pentagon, hexagon)
- Quadrilateral (four-sided polygon, e.g., square, rhombus, rectangle, parallelogram, trapezoid)
- Quarter past, quarter to
- Right angle (e.g., a square corner)
- Second (unit for measuring time)
- Third of (shapes), thirds (three equal shares)
- Whole
  - 2 halves
  - 3 thirds
  - 4 fourths
Familiar Terms and Symbols

- Attributes (characteristics of an object such as number of sides, angles, or faces)
- Cube (three-dimensional shape composed of six squares)
- Face (a two-dimensional side of a three-dimensional shape)
- Fourth of (shapes), fourths (four equal shares)
- Half of (shapes), halves (two equal shares)
- Half past (expression for 30 minutes past a given hour)
- Half hour (interval of time lasting 30 minutes)
- Hour (unit for measuring time, equivalent to 60 minutes or 1/24 of a day)
- Minute (unit for measuring time, equivalent to 60 seconds, 1/60 of an hour)
- O’clock (used to indicate time to a precise hour with no additional minutes)
- Two-dimensional shapes (familiar prior to Grade 2):
  - Circle
  - Half-circle
  - Quarter-circle
  - Hexagon (2 dimensional figure enclosed by six straight sides and six angles)
  - Rectangle (2 dimensional figure enclosed by four straight sides and four right angles)
  - Rhombus (2 dimensional figure enclosed by four straight sides of the same length)
  - Square (rectangle with four sides of the same length)
  - Trapezoid (2 dimensional figure enclosed by four straight sides with only one pair of parallel sides)
  - Triangle (2 dimensional figure enclosed by three straight sides)
  - Quarter of (shapes), quarters (4 equal shares)
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.

This standard is only taught in this module.

This standard calls for students to tell (orally and in writing) and write time after reading analog and digital clocks.

Time should be to 5 minute intervals, and students should also use the terms a.m. and p.m. Teachers should help students make the connection between skip counting by 5s (2.NBT.2) and telling time on an analog clock.

Some students might confuse the hour and minutes hands. For the time of 3:45, they say the time is 9:15. Also, some students name the numeral closest to the hands, regardless of whether this is appropriate. For instance, for the time of 3:45 they say the time is 3:09 or 9:03. One way to avoid this confusion is to use Dr. John Van de Walle’s strategy of using a one-handed clock to begin telling time. This gets students to focus on the hour hand first. It also helps them understand that the hour hand gives the most significant information when telling time.

Example of mastery:

![Image of a clock showing 12:25 a.m. or p.m.]

Reason with shapes and their attributes.

2.G.1 Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces. Identify triangles, quadrilaterals, pentagons, hexagons, and cubes. (Sizes are compared directly or visually, not compared by measuring.)

This standard is only taught in this module.

This standard calls for students to identify (recognize) and draw shapes based on a given set of attributes. These include triangles, quadrilaterals (squares, rectangles, and trapezoids), pentagons, hexagons and cubes. Pentagons, triangles, and hexagons should appear as both regular (equal sides and equal angles) and irregular.

Example:

Draw a closed shape that has five sides. What is the name of the shape? Student - I drew a shape with 5 sides. It is called a pentagon.

Students recognize all four sided shapes as quadrilaterals. Students use the vocabulary word “angle” in place of “corner” but they do not need to name angle types.

Common Misconceptions:

Some students may think that a shape is changed by its orientation. They may see a rectangle with the longer side as the base, but claim that the same rectangle with the shorter side as the base is a different shape. This is why it is so important to have young students handle shapes and physically feel that the shape does not change regardless of the orientation, as illustrated.

If students are only shown equilateral triangles then when they see scalene or isosceles triangles, they do not recognize them as triangles even though they have three sides. So you must make sure you are always showing students various types of shapes and
not just the regular shapes that they see in pattern blocks and on posters.

Example of mastery:

1. Match each description to the correct shape name by drawing a line. Draw an example for each shape to the right.

\[ \text{triangle} \]

\[ \text{quadrilateral} \]

Dr. 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.

This standard is only taught in this module.

This standard calls for students to partition (divide) circles and rectangles into 2, 3 or 4 equal shares (regions).

Students should also work with the vocabulary terms halves, thirds, half of, third of, and fourth (or quarter) of. While students are working on this standard, teachers should help them to make the connection that a “whole” is composed of two halves, three thirds, or four fourths.

Common Misconceptions: Students also may believe that a region model represents one out of two, three or four fractional parts without regard to the fact that the parts have to be equal shares, e.g., a circle divided by two equally spaced horizontal lines represents three thirds.

Example: Divide each square into fourths a different way.
Content Suggestions

The “must do” lessons were selected due to the math concept taught in the lesson, based on the EngageNY objective. Within these lessons, the objective is scaffolded from the fluency activities into the concept development and then practiced in the problem set. However, the “must do” lessons may not be perfect for you students. So, as you look at these “must do” lessons, customize the lessons around the math concept and your students. The “may do” lessons may be ways to reteach or extend the math concepts for your students. Don’t assume that they are an omit lesson. Use your understanding of the math concepts and your knowledge of what your students need to make the decision to use or omit the lesson.

<table>
<thead>
<tr>
<th>Standards</th>
<th>Topic and Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.G.1</td>
<td>Attributes of Geometric Shapes</td>
</tr>
<tr>
<td></td>
<td>Lesson 1: Describe two-dimensional shapes based on attributes. (MP.6)</td>
</tr>
<tr>
<td></td>
<td>Lesson 2: Build, identify, and analyze two-dimensional shapes with specified attributes. (MP.7)</td>
</tr>
<tr>
<td></td>
<td>Lesson 3: Use attributes to draw different polygons including triangles, quadrilaterals, pentagons, and hexagons. (MP.3)</td>
</tr>
<tr>
<td></td>
<td>Lesson 4: Use attributes to identify and draw different quadrilaterals including rectangles, rhombuses, parallelograms, and trapezoids. (MP.6)</td>
</tr>
<tr>
<td></td>
<td>Lesson 5: Relate the square to the cube, and describe the cube based on attributes. (MP.6)</td>
</tr>
</tbody>
</table>

Lesson 5 may not take a full day.

By the end of Topic A, your students should be able to:
- Recognize, create, and characterize different shapes.
- Identify attributes, such as the number of sides and angles, of shapes.
- Understands the different types of polygons.

1. Draw a shape that has 5 sides and name the shape. (DOK 1)
2. Draw a shape with 3 angles and name the shape. (DOK 1)
3. Draw a shape with 4 equal sides. Name the shape. (DOK 1)

2.G.3
2.G.1

B Composite Shapes and Fraction Concepts
- Lesson 6: Combine shapes to create a composite shape; create a new shape from composite shapes. (MP.6)
- Lesson 7: Interpret equal shares in composite shapes as halves, thirds, and fourths. (MP.3)
Lesson 8: Interpret equal shares in composite shapes as halves, thirds, and fourths. (MP.1)

By the end of Topic B, your students should be able to:
- Combine shapes to create a composite shape.
- Find several ways to compose new shapes by repositioning pieces.
- Identify halves, thirds, and fourths of composite shapes.

<table>
<thead>
<tr>
<th>2.G.3</th>
<th>C</th>
<th>Halves, Thirds, and Fourths of Circles and Rectangles</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.G.1</td>
<td></td>
<td>Lessons 9: Partition circles and rectangles into equal parts, and describe those parts as halves, thirds, or fourths. (MP.3)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lessons 10: Partition circles and rectangles into equal parts, and describe those parts as halves, thirds, or fourths. (MP.1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lesson 11: Describe a whole by the number of equal parts including 2 halves, 3 thirds, and 4 fourths. (MP.7)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lesson 12: Recognize that equal parts of an identical rectangle can have different shapes. (MP.1)</td>
</tr>
</tbody>
</table>

By the end of Topic C, your students should be able to:

**Problems 1-4:**
- Understand the word partition.
- Be able to divide circles and rectangles into halves, thirds, and fourths.
- Be able to describe the shape parts as halves, thirds, and fourths.

**Snapshot Assessment 2.G.3**

1. Divide this circle in two equal shares.
2. Divide this rectangle in three equal shares.
3. Divide this square in four equal shares.

Complete the following sentences:
1) I divided my circle into equal shares. It has equal sides.
2) I divided my rectangle into three parts. It is divided into three equal parts.
3) I divided my square into four parts. It is divided into four equal shares.

Lesson 13: Construct a paper clock by partitioning a circle into halves and quarters, and tell time to the half hour or quarter hour. (MP.3)

Lesson 14: Tell time to the nearest five minutes. (MP.3)

Lesson 15: Tell time to the nearest five minutes; relate a.m. and p.m. to time of day.

**Days: 4**

**Days: 3**
Lesson 16: Solve elapsed time problems involving whole hours and a half hour. (MP.7)

By the end of Topic D, your students should be able to:
- Tell time to the nearest 5 minutes.
- Be able to use a.m. and p.m. correctly.
- Tell time on a digital and analog clock.

Total Instructional Days: 15 “Must do” Lessons in an 20 day window, giving opportunity to support foundational standards and go in depth with focus standards.

### Supporting Resources

<table>
<thead>
<tr>
<th>Foundational standards to support pre-requisite needs</th>
<th>Suggested Stations/Lessons/Games</th>
<th>Suggested Number Talks</th>
</tr>
</thead>
</table>
| **1.MD.3** Tell and write time in hours and half-hours using analog and digital clocks. Recognize and identify coins, their names, and their values. | Small Group Stations:  
- **Shapes Masters**  
  - Teaching Student Centered Mathematics Van de Walle, K-3, Activity 7.1 “Shape Sorts” page 194  
  - Teaching Student Centered Mathematics Van de Walle, K-3, Activity 7.2 “What’s My Shape” Page 195  
  - Student reaches into a bag and feels the hidden three-dimensional shape. Student describes the hidden shape using defining attributes.  
  - I have two circle faces and one curved surface, what shape am I?  
- **Problem Solving Tasks:**  
  - **Shape Sort**  
  - **Counting Squares** (Introductory Task - 20 minutes)  
  - **All vs Only One**  
  - **Part and Whole Primary Level** This cookie problem solving task explores the portioning in half.  
  - **Which One Doesn’t Belong? - Video** | Number talks in 2nd grade should continue to focus on Addition and Subtraction.  
- **Doubles**  
  - 4 + 4 = (full model)  
  - 5 + 5 = (partial model)  
  - 14 + 5 = (no model or partial model)  
- **Combinations (Hiding Assessment)** Use numbers up to sum of 10 as appropriate for your class.  
  - _____ + 5 = 6  
  - 4 + _____ = 6  
- **Word problem with missing addend:** There are 6 kids on the team, but only 3 showed up for practice. How many are missing. Manipulatives and/or cubes may be used. |
<p>| <strong>1.G.1</strong> Distinguish between defining attributes (e.g., triangles are closed and three-sided) versus non-defining attributes (e.g., color, orientation, overall size); build and draw shapes to possess defining attributes. |  |
| <strong>1.G.2</strong> Compose two-dimensional shapes (rectangles, squares, trapezoids, triangles, half-circles, and quarter-circles) or three-dimensional shapes (cubes, right rectangular prisms, right circular cones, and right circular cylinders) to create a composite shape, and compose new shapes from the composite shape. (Students do not need to learn formal names such as “right rectangular prism.”) |  |
| <strong>1.G.3</strong> Partition circles and rectangles into two and four equal shares, describe the shares using the words halves, fourths, and quarters, and use the phrases half of, fourth of, and quarter of. Describe the whole as two of, or four of the shares. Understand for these examples that decomposing into more equal shares creates smaller shares. |  |</p>
<table>
<thead>
<tr>
<th>Standard</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.NBT.2</td>
<td>Count within 1000; skip-count by 5s, 10s, and 100s.</td>
</tr>
<tr>
<td>2.NBT.5</td>
<td>Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.</td>
</tr>
<tr>
<td>2.NBT.6</td>
<td>Add up to four two-digit numbers using strategies based on place value and properties of operations.</td>
</tr>
<tr>
<td>2.MD.1</td>
<td>Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.</td>
</tr>
</tbody>
</table>

### Module 8 Standards

- **Major standards (areas of intensive focus)** - underlined and bolded
- **Supporting standards (supports the major standards and is taught with major standards)** - bolded
- **Additional standards (doesn’t connect to major work but is important to the progressions)** - italics.

#### 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.

This standard is only taught in this module.

#### Reason with shapes and their attributes.

**2.G.1** Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces. Identify triangles, quadrilaterals, pentagons, hexagons, and cubes. (Sizes are compared directly or visually, not compared by measuring.)

<table>
<thead>
<tr>
<th>Suggested Stations/Lessons/Games</th>
<th>Suggested Number Talks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learn Zillion: • Reading the Exact Time on a Clock</td>
<td>Number talks in 2nd grade should continue to focus on Addition and Subtraction within 20 using mental strategies, know all sums of 1 digit numbers.</td>
</tr>
<tr>
<td>What’s in a Name from Flip Book</td>
<td></td>
</tr>
</tbody>
</table>

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3 Use analog clock to provide a context for skip-counting by fives.

2.G.2 is addressed in Module 6.
This standard is only taught in this module.

| 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. |
|---------------------------------------------------------------|
| Learn Zillion: | • **Partition Rectangles and Circles into Equal Shares** |

This standard is only taught in this module.

<table>
<thead>
<tr>
<th><strong>Suggested Tools and Representations:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><em>These are recommendations from ENY Module Overview</em></td>
</tr>
<tr>
<td>o Cube: three-dimensional shape (real world examples such as a die, alphabet blocks, or a box)</td>
</tr>
<tr>
<td>o Geoboards</td>
</tr>
<tr>
<td>o Large instructional geared clock</td>
</tr>
<tr>
<td>o Pattern blocks</td>
</tr>
<tr>
<td>o Rulers</td>
</tr>
<tr>
<td>o Spaghetti</td>
</tr>
<tr>
<td>o Square tiles</td>
</tr>
<tr>
<td>o Student clocks, preferably those with gears which can provide the appropriate hour-hand alignment</td>
</tr>
<tr>
<td>o Toothpicks</td>
</tr>
</tbody>
</table>