

Course Title: Mathematics	Full Year	Required
<p><b>Course Description:</b>            The big ideas in grade 2 include: extending understanding of the base-ten number system, building fluency with addition and subtraction, using standard units of measure, and describing and analyzing shapes.            The mathematical work for grade 2 is partitioned into 9 units:</p> <ol style="list-style-type: none"> <li>1. Adding, Subtracting, and Working with Data</li> <li>2. Adding and Subtracting within 100</li> <li>3. Measuring Length</li> <li>4. Addition and Subtraction on the Number Line</li> <li>5. Numbers to 1,000</li> <li>6. Geometry, Time, and Money</li> <li>7. Adding and Subtracting within 1,000</li> <li>8. Equal Groups</li> <li>9. Putting it All Together</li> </ol> <p>In these materials, particularly in units that focus on addition and subtraction, teachers will find terms that refer to problem types, such as Add To, Take From, Put Together or Take Apart, Compare, Result Unknown, and so on. These problem types are based on common addition and subtraction situations, as outlined in <a href="#">Table 1 of the Mathematics Glossary</a> section of the Common Core State Standards.</p>		
<p><b>Additional Course Information:</b></p> <p>The big ideas in Grade 2 include:</p> <ul style="list-style-type: none"> <li>● Representing and solving problems involving addition and subtraction</li> <li>● Adding and subtracting within 20</li> <li>● Understanding place value</li> <li>● Using place value understanding and properties of operations to add and subtract</li> <li>● Measuring and estimating lengths in standard units</li> <li>● Relating addition and subtraction to length</li> </ul> <p>Required fluency in grade 2 includes:</p> <ul style="list-style-type: none"> <li>● Single-digit sums and differences (sums from memory by end of Grade 2)</li> <li>● Add/subtract within 100</li> </ul>	<p><b>Core Resources:</b></p> <p><a href="#">Illustrative Mathematics</a></p> <p><a href="#">Instructional Routines and Math Language Routines</a></p> <p><a href="#">Glossary - Student-friendly</a></p> <p><a href="#">Required Materials</a></p> <p><b>IM en Español:</b></p> <p><a href="#">Developing a Mathematical Community</a></p>	<p><b>Are there any attachments <u>at the course level</u> that teachers will need?</b></p> <p><a href="#">Scope and Sequence</a> This document should be reviewed at the start of the year and each unit for information on language routines, expectations, and possible misconceptions.</p> <p><a href="#">Pacing Guide and Dependency Diagrams K-5</a></p>

## Unit 4: Addition and Subtraction on the Number Line

Duration: 15 - 16 days

### Unit Overview - FOCUS:

#### Unit Learning Goals

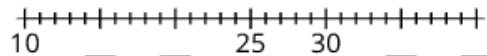
- Students learn about the structure of a number line and use it to represent numbers within 100. They also relate addition and subtraction to length and represent the operations on the number line.

In this unit, students are introduced to the number line, an essential representation that will be used throughout students' K–12 mathematical experience. They learn to use the number line to represent whole numbers, sums, and differences.

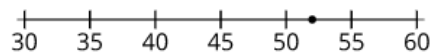
In a previous unit, students learned to measure length with rulers. Here, they see that the tick marks and numbers on the number line are like those on a ruler: both show equally spaced numbers that represent lengths from 0.

Students use this understanding of structure to locate and compare numbers on the number line, as well as to estimate numbers represented by points on the number line.

*Locate and label 17 on the number line.*



*What number could this be? \_\_\_\_\_*



Students then learn conventions for representing addition and subtraction on the number line: using arrows pointing to the right for adding and arrows pointing to the left for subtracting. Students also use the number line to represent addition and subtraction methods discussed in Number Talks, such as counting on, counting back by place, and decomposing a number to get to a ten. The reasoning here

### Topic Titles:

#### • Section A: The Structure of the Number Line

- Represent whole numbers within 100 as lengths from 0 on a number line.
- Understand the structure of the number line.

#### • Section B: Add and Subtract on the Number Line

- Represent sums and differences on a number line.

deepens students' understanding of the relationship between addition and subtraction.

The number lines in this unit show a tick mark for every whole number in the given range, though not all may be labeled with the numeral. As students become more comfortable with this representation, they may draw number lines that show only the numbers needed to solve the problems, which is acceptable.

**Coherence: How does this unit build on and connect to prior knowledge and learning?**

In a previous unit, students learned about standard length units. They created their own rulers by utilizing centimeter cubes and used their understanding of length units to measure the length of objects with rulers, meter sticks, and other tools. Students interpreted the scale of line plots and created their own line plots by relating their structure to the length units on measurement tools.

Students know how to count by 5s and 10s. They will leverage their understanding of skip counting by 5 and 10 to locate numbers and build on their understanding of the number line as a representation that includes all numbers.

In grade 1, students compared two two-digit numbers based on the meaning of tens and ones digits and recorded their comparisons with symbols. Students will build on this understanding when they use number lines to compare numbers and see that as you move to the right the numbers increase and as you move to the left the numbers decrease. They will be using these concepts to develop an understanding of how addition and subtraction can be modeled with a number line.

In previous topics in grade 2, students use place value strategies including base-ten blocks and base-ten diagrams to represent and show addition and subtraction within 100. In this unit, they will connect this understanding to making jumps of tens and ones to add and subtract and represent their thinking on a number line. Previously students learned to look for ways to decompose a number in an expression to get to a ten when adding or subtracting numbers mentally. They have learned to use this method when adding or subtracting larger numbers which require composing or decomposing a ten.

**Essential Questions:**

1. How are number lines useful?

**Enduring Understanding:**

- **Number lines are a way to represent our thinking.** We can use the structure of a number line to locate and compare numbers as well as support our thinking with addition and subtraction. Number lines help us to visualize which method may be most efficient when adding and subtracting numbers.

**What Students Will Know: This should be based on the competencies.**

- The number line is a diagram that represents numbers as lengths from 0 using equally spaced tick marks or points.
- A point can represent a specific number on a number line.
- Tick marks and numbers on a number line are like those on a ruler.
- The importance of equal spacing and sequencing numbers from left to right on a number line.
- Number lines with different unit intervals can be used to represent the same numbers and relationships.
- As you move to the right on the number line, numbers increase in value because they are a greater distance from 0.
- As you move to the left on the number line, numbers decrease in value because they are a smaller distance from 0.
- An arrow that shows moving from one number to another on the number line (“jumps”) can represent addition or subtraction.
- Jumping to the right represents addition and jumping to the left represents subtraction on a number line.
- The number line is a way to visualize using the counting on and counting back strategies for subtraction with

**What students will do: This should be based on the competencies.**

- Construct a number line to represent numbers within 20.
- Locate whole numbers on a number line.
- Identify, describe and define the features of a number line.
- Use multiples of 5 and 10 to locate numbers up to 100 on the number line.
- Estimate numbers on a number line without any tick marks by approximating the location of the number relative to the position of represented numbers.
- Represent a whole number on a number line within 100 and describe the point in terms of its length from 0.
- Use a number line to compare numbers.
- Write equations based on number line representations
- Represent given equations on number lines.
- Represent subtraction methods on the number line and compare how each representation shows the difference
- Find differences within 100 and represent their thinking on a number line
- Represent place value methods for solving addition and subtraction equations on a number line
- Represent equations with an unknown in all positions on a number line and find the unknown values.

**Unit Specific Vocabulary:**

**Academic vocabulary**

Number Line  
Sequence  
Tick marks  
Multiples  
Compare  
Relative position  
Jumps  
Representation  
Difference  
“?” unknown

<p>two-digit numbers.</p> <ul style="list-style-type: none"> <li>● Just like with base-ten blocks, they can think about subtracting or counting by tens first or by ones first on the number line.</li> <li>● We may choose different methods to add and subtract within 100 based on the numbers we are working with.</li> <li>● When adding and subtracting within 100, we can use diagrams, base-ten blocks, number lines, and equations to make sense of stories and situations and to show our thinking. They are all connected.</li> </ul>		
<p><b>Entry Level Assessment and Connection to Unit:</b></p> <p><a href="#">Section A Pre-Unit Practice Problems</a>  <a href="#">Section B Pre-Unit Practice Problems</a></p>	<p><b>Unit Materials, Resources and Technology:</b></p> <ul style="list-style-type: none"> <li>● <a href="#">Illustrative Mathematics</a></li> <li>● <a href="#">Instructional Routines and Math Language Routines</a></li> <li>● <a href="#">Glossary - Student-friendly</a></li> <li>● <a href="#">Required Materials</a></li> <li>● <a href="#">IM en Español</a></li> <li>● <a href="#">Pacing Guide and Dependency Diagrams K-5</a></li> </ul>	
<p><b>Opportunities for Interdisciplinary Connections:</b></p> <p>Opportunities for Interdisciplinary connections include the following:</p> <ul style="list-style-type: none"> <li>● Science: connecting rulers/other measurement tools to number lines, connecting a thermometer to a ruler</li> <li>● Social Studies: measuring distances with a ruler (once again connecting to a number line)</li> </ul>		

<p><b>Any links, attachments and resources:</b></p> <p><a href="#">Instructional Routines Document</a></p> <p><a href="#">Family Support Materials</a></p>	<p><b>Planning Ideas:</b></p> <p><a href="#">Components of a Typical IM Lesson</a></p> <p><a href="#">What To Know About IM When Planning</a></p> <p><a href="#">Where to Find the Mathematical Practices in the Units</a></p> <p><a href="#">Assessing the Mathematical Practices</a></p>
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Topic # 1 (Section A)

Topic Name: Section A - The Structure of the Number Line

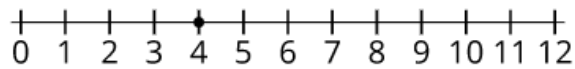
Duration:

Recommended: 6 days (6 lessons)

**Topic Description:**

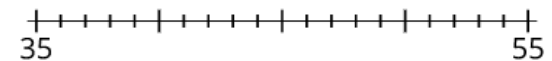
In this section, students begin to use the number line as a tool for understanding numbers and number relationships. They learn that the number line is a visual representation of numbers shown in order from left to right, with equal spacing between each number.

Students see that each number tells the number of length units from 0, just like on the ruler. This means that the numbers to the left are smaller (fewer units away from 0) and those farther to the right are larger (more units away from 0).

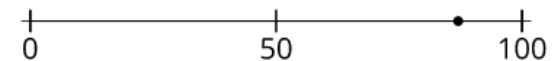


Students learn that whole numbers can be represented with tick marks and points on the number line. They then locate, label, and compare numbers on a number line. They also estimate numbers that could be represented by points on a number line.

*Locate and label 43 on the number line.*



*What number could this be? \_\_\_\_\_*



**Section Learning Goals**

- Represent whole numbers within 100 as lengths from 0 on a number line.
- Understand the structure of the number line.

<p><b>Competencies Addressed:</b>  <b>Understanding and Applying Number Systems</b>  <b>2.NS.2</b> I can count, read, and write whole numbers. (2.NBT.A.2-3)  <b>2.NS.4</b> I can use my understanding of place value and properties of operations to add. (2.NBT.B.5-9)  <b>2.NS.5</b> I can use my understanding of place value to subtract. (2.NBT.B.5, 7-9)</p> <p><b>Operations and Algebraic Thinking</b>  <b>2.OA.3</b> I can represent and solve problems involving addition and subtraction.(2.OA.A.1, 2.MD.B.5-6)</p>	<p><b>Essential Question and Enduring Understanding Addressed in this Topic:</b>  <b>Essential Question</b>  1. How are number lines useful?</p> <p><b>Enduring Understanding</b></p> <ul style="list-style-type: none"> <li>● <b>Number lines are a way to represent our thinking.</b> We can use the structure of a number line to locate and compare numbers as well as support our thinking with addition and subtraction. Number lines help us to visualize which method may be most efficient when adding and subtracting numbers.</li> </ul>
<p><b>In this Topic, students will know:</b></p> <ul style="list-style-type: none"> <li>● The number line is a diagram that represents numbers as lengths from 0 using equally spaced tick marks or points.</li> <li>● A point can represent a specific number on a number line.</li> <li>● Tick marks and numbers on a number line are like those on a ruler.</li> <li>● The importance of equal spacing and sequencing numbers from left to right on a number line.</li> <li>● Number lines with different unit intervals can be used to represent the same numbers and relationships.</li> <li>● As you move to the right on the number line, numbers increase in value because they are a greater distance from 0.</li> <li>● As you move to the left on the number line, numbers decrease in value because they are a smaller distance from 0.</li> </ul>	<p><b>Topic Vocabulary:</b></p> <p><b>Academic vocabulary</b>  Number Line  Sequence  Tick marks  Multiples  Compare  Relative position</p>

**In this Topic, students will be able to:**

- Construct a number line to represent numbers within 20.
- Locate whole numbers on a number line.
- Identify, describe and define the features of a number line.
- Use multiples of 5 and 10 to locate numbers up to 100 on the number line.
- Estimate numbers on a number line without any tick marks by approximating the location of the number relative to the position of represented numbers.
- Represent a whole number on a number line within 100 and describe the point in terms of its length from 0.
- Use a number line to compare numbers.

**Plan for Student Reflection:**

[Student Journal Prompts and Reflection Practices](#)

**Plan for Teacher Reflection:**

**Lesson 1:** In a previous unit, students learned to measure lengths using standard length units. How does this understanding help students understand the structure of the number line?

**Lesson 2:** Reflect on who participated in class today. What assumptions are you making about those who did not participate? How can you leverage each of your students' ideas to support them in being seen and heard in tomorrow's class?

**Lesson 3:** How effective were your questions in supporting students' thinking about the structure of the number line today? What did students say or do that showed they were effective?

**Lesson 4:** How did students explain why a number was greater than or less than another number? What can you do to support students who are not yet articulating their reasoning in terms of a number's location on the number line?

**Lesson 5:** What strategy did most students use when locating a number on a number line without the support of the tick marks? How can you support students to assess the reasonableness of their estimates in future lessons?

**Lesson 6:** Check-in with your norms and routines. Are they promoting engagement from all of your students? Are there any adjustments you might make so that all students do math tomorrow?

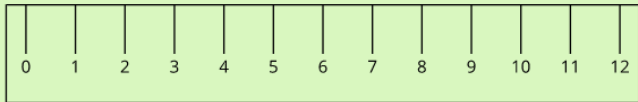
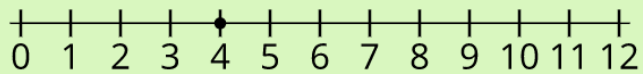
**Utilize additional strategies for Teacher Reflection:**

- Reviewing formative assessments
- Developing scaffolds
- Collaborative scoring
- PLCs
- Planning for small groups

## Topic 1 Task Development

<b>Task Title: Topic 1 - The Structure of the Number Line</b>	<b>Grade Level and Unit: Grade 2, Unit 4</b>
<b>Description of Task:</b> Students will arrange numbers on a number line and create a visual representation showing this on a number line. Students will locate numbers on a number line without tick marks to represent each number. Students use what they know about multiples of 10, the relative position of numbers on the number line, and comparing length to locate and label a set of numbers on the number line. They start by organizing number cards on a number line and make adjustments to their positions after each card is placed. After they place all of their cards, they locate and label the numbers on the number line. Then, students will compare the number lines that are created and discuss, using the structure of the number line, why some numbers were placed more precisely than others. This also gives them a chance to construct viable arguments for how they placed the numbers and to critique the reasoning of others.	<b>Purpose of Task:</b> The purpose of this task is for students to use their understanding of length and the structure of a number line to estimate the location of a number on a number line. Students will extend this understanding by estimating numbers on number lines that do not have tick marks to represent each consecutive whole number. Students use their understanding of length and unit intervals on the number line to estimate. Students should be encouraged throughout the lesson to explain why their estimates are reasonable using what they know about number, length, and the structure of the number line.
<b>Background of Students/Learning Progression:</b> In previous lessons, students estimated the length of objects using what they know about the size of standard length units and the tools used to measure them. Students have located numbers on number lines using what they know about the structure of a number line and the labeled tick marks. Students have also utilized rulers in previous units.	<b>Ensure all competencies are addressed in the task:</b> <input type="checkbox"/> Yes, all competencies are addressed <input type="checkbox"/> No - Task needs modification
<b>Getting Started:</b> In the lessons that make up Topic 1 - Section A of Unit 4, students will: <ul style="list-style-type: none"><li>● Represent whole numbers within 100 as lengths from 0 on a number line.</li><li>● Understand the structure of the number line.</li></ul> Lesson 1 (Warm Up) The purpose of this warm-up is for students to make sense of a new representation and how it is similar to and different from a ruler. If possible, display an actual ruler next to the number line. This will be useful when students create their own number lines in a later activity. While students may notice and wonder many things about these images, the connections between the features of a number line and a ruler are the important discussion points. "Today, we are going to think about how the first diagram might be helpful when thinking about numbers."	

What do you notice? What do you wonder?



Students may notice:

- They both show 12
- The bottom one looks like a ruler
- The top one has a black dot on the line above the number 4
- The top one doesn't have any sides

Students may wonder:

- Do these tools represent centimeters or inches?
- Why is there a dot? Should it be an x?
- Should the dot be above the line? Is it a line plot?

To synthesize the activity: “Today, we are going to think about how the first diagram might be helpful when thinking about numbers.”

### Section A

IM Lesson	<a href="#">Lesson 1: Whole Numbers on the Number Line</a>	<a href="#">Lesson 2: Features of a Number Line</a>	<a href="#">Lesson 3: Unlabeled Tick Marks</a>	<a href="#">Lesson 4: Compare Numbers on a Number Line</a>	<a href="#">Lesson 5: Estimate on a Number Line</a>	<a href="#">Lesson 6: Center Day 1 (optional)</a>
Learning Cycle Model	Making Meaning	Making Meaning	Investigation	Investigation	Create/Produce	Additional Learning
Naugatuck Math Competency	2.OA.3	2.OA.3 2.NS.2	2.OA.3 2.NS.2	2.OA.3 2.NS.4, 2.NS.5	2.OA.3	2.OA.3 2.NS.2 2.NS.4, 2.NS.5
Math Practice Standards	MP5	MP3, MP6, MP7, MP8	MP3, MP7	MP6, MP7	MP1	

<b>Lesson Purpose</b>	The purpose of this lesson is for students to understand the structure of the number line and learn how whole numbers can be represented on the number line with tick marks and points.	The purpose of this lesson is for students to identify and describe the defining features of a number line.	The purpose of this lesson is for students to represent numbers within 100 on number lines that do not label each tick mark.	The purpose of this lesson is for students to recognize that on a number line the numbers increase to the right and decrease to the left.	The purpose of this lesson is for students to use their understanding of length and the structure of a number line to estimate the location of a number on a number line.	The purpose of this lesson is for students to represent numbers on a number line and practice addition and subtraction within 100.
<b>Vocabulary Focus</b>	Number Line, sequence, tick marks		Multiples	Compare	Relative position	
<b>Lesson Materials/ Resources</b>	<p><a href="#">Lesson 1 Slides</a></p> <p><a href="#">Teacher Presentation Materials</a></p> <p><a href="#">Student Pages</a></p> <p><b>Activity 1:</b></p> <ul style="list-style-type: none"> <li>● Display the number line image from the warm up</li> </ul> <p><b>Activity 2:</b></p> <ul style="list-style-type: none"> <li>● Each student needs a sentence strip or a 24–30 inch rectangular strip of paper.</li> </ul>	<p><a href="#">Lesson 2 Slides</a></p> <p><a href="#">Teacher Presentation Materials</a></p> <p><a href="#">Student Pages</a></p> <p><b>Activity 1:</b></p> <ul style="list-style-type: none"> <li>● Create a set of <a href="#">Class Number Line Cards (0–30)</a>.</li> <li>● Give each student a number card.</li> </ul>	<p><a href="#">Lesson 3 Slides</a></p> <p><a href="#">Teacher Presentation Materials</a></p> <p><a href="#">Student Pages</a></p> <p><b>No materials to copy for Activities</b></p>	<p><a href="#">Lesson 4 Slides</a></p> <p><a href="#">Teacher Presentation Materials</a></p> <p><a href="#">Student Pages</a></p> <p><b>Activity 1:</b></p> <ul style="list-style-type: none"> <li>● Each student will need their <b>number line they made in Lesson 1</b>.</li> <li>● Each group of 2 needs 3 number cubes and 2 counters.</li> </ul> <p><b>Activity 2:</b></p> <ul style="list-style-type: none"> <li>● Give each</li> </ul>	<p><a href="#">Lesson 5 Slides</a></p> <p><a href="#">Teacher Presentation Material</a></p> <p><a href="#">Student Pages</a></p> <p><b>Activity 2:</b></p> <ul style="list-style-type: none"> <li>● Create a number line on chart paper for each group of students.</li> <li>● On each number line, draw tick marks at the beginning (label 0) and the end (label</li> </ul>	<p><a href="#">Lesson 6 Slides</a></p> <p><a href="#">Teacher Presentation Materials</a></p> <p><a href="#">Student Pages</a></p> <p><b>Activity 1:</b></p> <ul style="list-style-type: none"> <li>● Give each group a <a href="#">Number Line Scoot Stage 1 Spinner</a>, paper clip, centimeter cubes, a <a href="#">Number Line Scoot Stage 1 Gameboard</a>, and the <a href="#">Number Line</a></li> </ul>

	<ul style="list-style-type: none"> <li>Each group of 2 students needs access to assorted objects that can be used as a length unit to construct number lines (base-ten blocks, inch tiles, paper clips, large erasers, small sticky notes).</li> </ul> <p><b>**Save student number lines for lesson 4</b></p> <p><a href="#">Cool-down: On the Number Line</a></p>	<p><a href="#">Cool-down: Mai's Number Line</a></p>	<p><a href="#">Cool-down: What's Missing?</a></p>	<p>group a <a href="#">Number Line to 100</a>, 2 number cubes, and a dry erase marker.</p> <p>*Put number line in plastic protector for future use</p> <p><a href="#">Cool-down: Compare on the Number Line</a></p>	<p>40)</p> <ul style="list-style-type: none"> <li>On each number line, draw tick marks and label: 10, 20, 30.</li> <li>Give each group a set of <a href="#">Order Numbers on the Number Line Cards</a> (10 cards).</li> </ul> <p><a href="#">Cool-down: What Number Could This Be?</a></p>	<p><a href="#">Scoot Stage 1 Directions.</a></p> <p><b>Activity 2:</b></p> <ul style="list-style-type: none"> <li>Centers - see below</li> </ul>
Assessment	<p><b>Formative Assessment Strategies: observation, questioning, student discourse : <a href="#">Monitoring Sheet</a></b>  See <a href="#">Section A Checkpoint Assessment</a>, <a href="#">Section A Checkpoint Teacher's Guide</a></p>					
						<p><a href="#">Section A Practice Problems</a></p>

<b>Centers Materials</b>	<a href="#">Five in a Row: Addition and Subtraction (1–2)</a> , Stage 6: Add within 100 with Composing (Supporting)  <a href="#">How Close? (1–5)</a> , Stage 3: Add to 100 (Supporting)	<a href="#">Five in a Row: Addition and Subtraction (1–2)</a> , Stage 6: Add within 100 with Composing (Supporting)  <a href="#">How Close? (1–5)</a> , Stage 3: Add to 100 (Supporting)	<a href="#">Five in a Row: Addition and Subtraction (1–2)</a> , Stage 6: Add within 100 with Composing (Supporting)  <a href="#">How Close? (1–5)</a> , Stage 3: Add to 100 (Supporting)	<a href="#">Five in a Row: Addition and Subtraction (1–2)</a> , Stage 6: Add within 100 with Composing (Supporting)  <a href="#">How Close? (1–5)</a> , Stage 3: Add to 100 (Supporting)	<a href="#">Five in a Row: Addition and Subtraction (1–2)</a> , Stage 6: Add within 100 with Composing (Supporting)  <a href="#">How Close? (1–5)</a> , Stage 3: Add to 100 (Supporting)	<a href="#">Capture Squares</a> , Stages 3 and 4  <a href="#">Number Line Scoot</a> , Stage 1  <a href="#">Number Puzzles</a> , Stage 4
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**Making Meaning:**

In Lesson 1, students learn about the number line, a diagram that represents numbers as lengths from 0 using equally spaced tick marks or points, and learn how to locate and represent whole numbers on the number line. Students are introduced to the idea of using a point to represent specific numbers on the number line. Students build on their experiences with measurement to construct a number line to represent numbers within 20. They learn that unlike a linear measurement tool or a line plot, the unit intervals on a number line do not correspond to a specific unit of measure. In the lesson synthesis, students consider how number lines with different unit intervals can be used to represent the same numbers and relationships.

In Lesson 2, Activity 1, students each get a number and work together to decide how to place their numbers on a class number line, thinking about the importance of equal spacing and sequencing numbers from left to right. In the second activity, students analyze different student-created number lines and suggest revisions that should be made to make each number line a more accurate representation. Throughout the lesson, students deepen their understanding of the structure of the number line by attending to precision and thinking about the ways they can describe how to correct or improve a number line to others (MP3, MP6).

**Lesson 1:** [Whole Numbers on the Number Line](#)

- The purpose of this lesson is for students to understand the structure of the number line and learn how whole numbers can be represented on the number line with tick marks and points.
- [Lesson 1 Slides](#)
- [Teacher Presentation Materials](#)

**Lesson 2: [Features of a Number Line](#)**

- The purpose of this lesson is for students to identify and describe the defining features of a number line.
- [Lesson 2 Slides](#)
- [Teacher Presentation Materials](#)

**Investigation:**

In Lesson 3, students use multiples of 5 and 10 to locate numbers up to 100 on the number line. Students leverage their understanding of skip counting by 5 and 10 to locate numbers and build on their understanding of the number line as a representation that includes all numbers. In future lessons, students will estimate numbers on a number line without any tick marks by approximating the location of the number relative to the position of represented numbers.

In Lesson 4, students recognize that as you move to the right on the number line, numbers increase in value because they are a greater distance from 0. Students also use the relative position of numbers and generalize that a number that is greater than a given number if it is farther to the right on the number line. To demonstrate this understanding, students compare numbers within 100 (a skill from grade 1) and use the number line to explain their comparison (MP7).

**Lesson 3: [Unlabeled Tick Marks](#)**

- The purpose of this lesson is for students to represent numbers within 100 on number lines that do not label each tick mark.
- [Lesson 3 Slides](#)
- [Teacher Presentation Materials](#)

**Lesson 4: [Compare Numbers on a Number Line](#)**

- The purpose of this lesson is for students to recognize that on a number line the numbers increase to the right and decrease to the left.
- [Lesson 4 Slides](#)
- [Teacher Presentation Materials](#)

**Create and Produce:**

In Lesson 5, students extend this understanding by estimating numbers on number lines that do not have tick marks to represent each consecutive whole number. Students use their understanding of length and unit intervals on the number line to estimate. Students should be encouraged throughout the lesson to explain why their estimates are reasonable using what they know about number, length, and the structure of the number line.

**Lesson 5: [Estimate on a Number Line](#)**

- The purpose of this lesson is for students to use their understanding of length and the structure of a number line to estimate the location of a number on a number line.
- [Lesson 5 Slides](#)
- [Teacher Presentation Materials](#)

**Communicate and Present:**

Lesson 5 Activity 2

Students will participate in a gallery walk to share the number lines that they created.

“You will be working with your group to arrange the number cards on the number line.”

“Take turns picking a card and placing it near its spot on the number line.”

“Explain how you decided where to place your card.”

“If you think you need to rearrange other cards, explain why.”

“When you agree that you have placed all the numbers in the right spots, mark each of the numbers on your cards with a point on the number line. Label each point with the number it represents.”

“Check to make sure all of your numbers are represented in the spots you want them on the number line.”

Students will do a gallery walk.

“What is the same and what is different between the different number lines?”

“Which numbers did most groups have in the same spot on their number lines?”

“Which numbers look like they are in different spots?”

**Reflection:**

“How did you use what you know about a number line to estimate today?” (I know numbers show a length on the number line. It helped me to think about estimating lengths like when we estimated centimeters and inches. I knew numbers need to be the same amount of space apart. It helped me think about how much space should be between numbers. I know you can use numbers that you are confident in to help you find where other numbers go.)

**Additional Learning:**

In Lesson 6, Activity 1, students learn stage 1 of a new center called Number Line Scoot, where they generate numbers and move that interval on shared number lines. The goal is to land exactly on the end of each number line. In Activity 2, students choose an activity to work on addition and subtraction.

**Lesson 6: [Center Day 1 \(optional\)](#)**

- The purpose of this lesson is for students to represent numbers on a number line and practice addition and subtraction within 100.
- [Lesson 6 Slides](#)
- [Teacher Presentation Materials](#)

**Notes: Follow the IM Lessons in order.**

**Complete File with Resources and Task:**

**Topic # 2 (Section B)****Topic Name: Section B - Add and Subtract on a Number Line****Duration:**

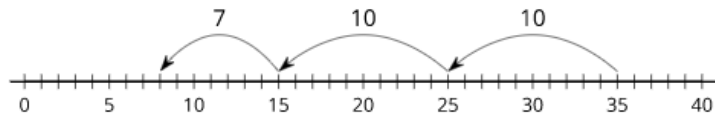
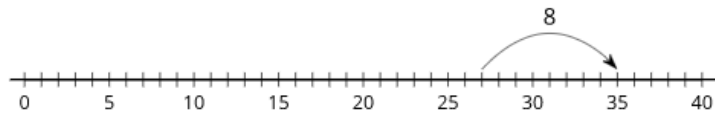
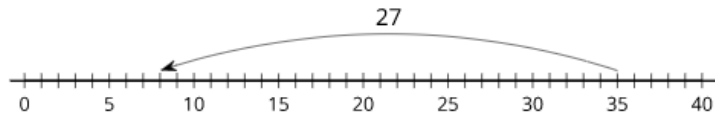
Recommended 9-10 days (8 lessons)

1 extra day for Unit Assessment

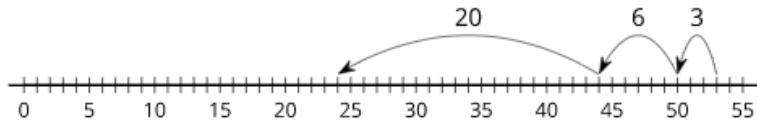
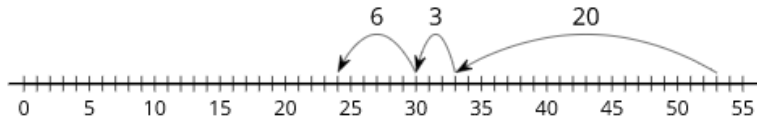
**Topic Description:**

In this section, students reason about sums and differences on the number line. They begin by using directional arrows: an arrow pointing right represents addition, and an arrow pointing left represents subtraction. Students write equations that correspond to given number-line representations, as well as represent given equations on the number line.

Later, students revisit the idea of subtraction as an unknown-addend problem and represent the unknown addend with a jump to the right. For example, here are three ways they may reason about  $35-27$  on the number line:



As students analyze various representations of a difference on the number line, they consider when certain strategies may be more efficient than others. They also consider reasoning strategies that are based on place value and the properties of operations (for example, adding tens and then ones, or adding ones and then tens). For example, here are two ways to find  $53-29$ :



At the end of the section, students use the number line to make sense of and solve story problems. They compare this representation with others used in earlier units.

**Section Learning Goals:**

- Represent sums and differences on a number line.

**Competencies Addressed:**

**Understanding and Applying Number Systems**

**2.NS.4** I can use my understanding of place value and properties of operations to add. (2.NBT.B.5-9)

**2.NS.5** I can use my understanding of place value to subtract. (2.NBT.B.5, 7-9)

**Operations and Algebraic Thinking**

**2.OA.3** I can represent and solve problems involving addition and subtraction. (2.OA.A.1, 2.MD.B.5-6)

**Essential Question and Enduring Understanding Addressed in this Topic:**

**Essential Question**

1. How are number lines useful?

**Enduring Understanding**

- **Number lines are a way to represent our thinking.** We can use the structure of a number line to locate and compare numbers as well as support our thinking with addition and subtraction. Number lines help us to visualize which method may be most efficient when adding and subtracting numbers.

<p><b>In this Topic, students will know:</b></p> <ul style="list-style-type: none"> <li>● An arrow moving from one number to another on the number line (“jumps”) shows the operations of addition and subtraction.</li> <li>● Jumping to the right represents addition and jumping to the left represents subtraction on a number line.</li> <li>● The number line is a way to visualize using the counting on and counting back strategies for subtraction with two-digit numbers.</li> <li>● Just like with base-ten blocks, they can think about subtracting or counting by tens first or by ones first on the number line.</li> <li>● We may choose different methods to add and subtract within 100 based on the numbers we are working with.</li> <li>● When adding and subtracting within 100, we can use diagrams, base-ten blocks, number lines, and equations to make sense of stories and situations and to show our thinking. They are all connected.</li> </ul>	<p><b>Topic Vocabulary:</b></p> <p><b>Academic vocabulary</b></p> <p>Jumps Representation Difference “?” unknown</p>
<p><b>In this Topic, students will be able to:</b></p> <ul style="list-style-type: none"> <li>● Write equations based on number line representations</li> <li>● Represent given equations on number lines.</li> <li>● Represent subtraction methods on the number line and compare how each representation shows the difference</li> <li>● Find differences within 100 and represent their thinking on a number line</li> <li>● Represent place value methods for solving addition and subtraction equations on a number line</li> <li>● Represent equations with an unknown in all positions on a number line and find the unknown values.</li> </ul>	<p><b>Plan for Student Reflection:</b></p> <p><a href="#">Student Journal Prompts and Reflection Practices</a></p> <hr/> <p><b>Plan for Teacher Reflection:</b></p> <p><b>Lesson 7:</b> How did students’ work with locating and labeling numbers on the number line prepare them to connect the direction of arrows to addition and subtraction on the number line? What can you do in the next lesson to build on this understanding?</p> <p><b>Lesson 8:</b> What evidence have students given that they understand the connection between the number line and written equations? What questions did you ask to make the connection more visible?</p> <p><b>Lesson 9:</b> Which students had opportunities to share their diagrams and thinking during whole-class discussion? How did you select these students?</p> <p><b>Lesson 10:</b> Why is it important for students to be able to represent their thinking and strategies using varied representations? How can you support students to feel comfortable using other</p>

representations?

**Lesson 11:** What evidence are you seeing that students are looking at the relationship between the numbers in an expression to select their method? What progress have you seen students make toward using methods based on the properties of operations and place value?

**Lesson 12:** Reflect on how students work together during partner work. How are students supporting one another when reasoning together and sharing mathematical ideas?

**Lesson 13:** Which students came up with an unexpected strategy or connection in today's lesson? What are some ways you can be more open to the ideas of each and every student?

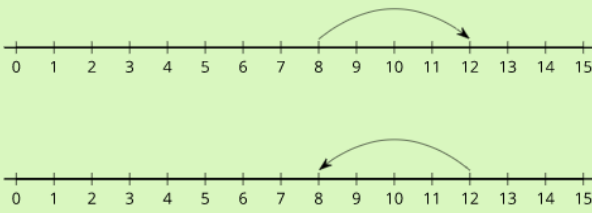
**Lesson 14:** Think about times when students were able to make connections to and build on the ideas of their peers during discussions in this unit. What norms or routines allowed students to engage with other students' ideas respectfully?

**Lesson 15:** Students shared their thinking multiple times in this lesson. What have you noticed about the language students use? What support can you offer to students who struggle to communicate their ideas orally?

**Utilize additional strategies for Teacher Reflection:**

- Reviewing formative assessments
- Developing scaffolds
- Collaborative scoring
- PLCs
- Planning for small groups

## Topic 2 Task Development

<p><b>Task Title: Topic 2 - Add and Subtract on a Number Line</b></p>	<p><b>Grade Level and Unit: Grade 2, Unit 4</b></p>
<p><b>Description of Task:</b> Lesson 15 - Activity 1 and 2 Students will write their own riddles involving people’s ages. Students apply previous understandings of the methods and representations for addition and subtraction problems within 100 to write and solve their own real-world problems. Students are encouraged to use the number line to represent the ages and solve problems. In the first part of the task, they become familiar with the context by solving problems about ages using any method that makes sense to them. Next, students write their own problems about the ages of people they know, represent the problems, and solve them.</p>	<p><b>Purpose of Task:</b> The purpose of this task is for students to leverage their previous work representing addition and subtraction problems on the number line to write and solve problems about the differences in family members’ ages. In this task, when students decide what quantities are important in a real-world situation, use these quantities to develop their own story problems, and choose math that matches a simplified situation, they build the precursor skills they need to model with mathematics (MP4)</p>
<p><b>Background of Students/Learning Progression:</b> In previous lessons, students represented addition and subtraction on the number line and considered different methods based on the numbers being added and subtracted.</p>	<p><b>Ensure all competencies are addressed in the task:</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Yes, all competencies are addressed</li> <li><input type="checkbox"/> No - Task needs modification</li> </ul>
<p><b>Getting Started:</b> To get students started with this topic, utilize the Lesson 7 warm-up:</p> <p>Lesson 7 (Warm Up) The purpose of this warm-up is to elicit the idea that addition and subtraction can be represented on the number line. Students have learned that numbers farther to the right are larger and numbers to the left are smaller. In this warm-up, students see two number lines with arrows that connect the same numbers. However, one arrow starts at the lesser number and points at the greater number and the other starts with the greater number and points at the lesser number. Noticing the difference in these “jumps” will be useful when students match equations to representations on number lines in a later activity. While students may notice and wonder many things about these images, it is important to discuss how the arrows represent increases and decreases in value on the number line. “How would you describe what’s happening on the number line?” (Start at 8, add/jump 4, and land on 12. Start at 12, subtract/jump back 4, and land on 8.) If needed, “How many spaces did we move on the number line?” “Sometimes, we label the jump with a number to show how far we jumped.” Record 4 above the jump. “Today, we are going to think about how we can show addition and subtraction on the number line.”</p> <div data-bbox="71 1084 703 1414" style="background-color: #e0f2f1; padding: 10px;"> <p>What do you notice? What do you wonder?</p>  </div>	

**Section B**

<b>IM Lesson</b>	<a href="#"><u>Lesson 7: Addition and Subtraction on the Number Line</u></a>	<a href="#"><u>Lesson 8: Equations on a Number Line</u></a>	<a href="#"><u>Lesson 9: The Difference Between Numbers</u></a>	<a href="#"><u>Lesson 10: Place Value and the Number Line</u></a>	<a href="#"><u>Lesson 11: Different Ways to Add and Subtract</u></a>	<a href="#"><u>Lesson 12: Equations with Unknowns</u></a>	<a href="#"><u>Lesson 13: Represent Story Problems</u></a>	<a href="#"><u>Lesson 14: Center Day 2 (optional)</u></a>	<a href="#"><u>Lesson 15: Riddles (optional)</u></a>
<b>Learning Cycle Model</b>	<b>Making Meaning</b>	<b>Making Meaning</b>	<b>Making Meaning</b>	<b>Investigation</b>	<b>Investigation</b>	<b>Investigation</b>	<b>Investigation</b>	<b>Investigation</b>	<b>Create / Produce</b>
<b>Naugatuck Math Competency</b>	2.OA.3	2.OA.3 2.NS.2	2.OA.3 2.NS.5	2.OA.3 2.NS.4 2.NS.5	2.OA.3 2.NS.5	2.OA.3 2.NS.4 2.NS.5	2.OA.3 2.NS.4, 2.NS.5	2.OA.3 2.NS.4 2.NS.5	2.OA.3 2.NS.4 2.NS.5
<b>Math Practice Standards</b>	MP2, MP7	MP3, MP7, MP8	MP2, MP7	MP2	MP2	MP7	MP2, MP7		
<b>Lesson Purpose</b>	The purpose of this lesson is for students to attend to the direction of the arrow on the number line to match addition and subtraction expressions.	The purpose of this lesson is for students to write equations based on number lines and represent equations on the number line.	The purpose of this lesson is for students to represent and compare different subtraction methods on the number line.	The purpose of this lesson is for students to compare representations of addition and subtraction methods represented on the number line.	The purpose of this lesson is for students to represent sums and differences on the number line with an emphasis on the strategy of using a ten to count up or count back	The purpose of this lesson is for students to represent equations with an unknown in all positions on the number line and find the unknown values.	The purpose of this lesson is for students to make connections between different representations of situations for sums and differences.	The purpose of this lesson is for students to practice adding and subtracting within 100 and representing addition and subtraction on the number line.	The purpose of this lesson is for students to generate their own addition and subtraction stories, and use the number line as a tool to write and solve story problems.
<b>Vocabulary Focus</b>	Jumps	Representati on	Difference			“?” unknown			

<b>Lesson Materials/ Resources</b>	<a href="#">Lesson 7 Slides</a>	<a href="#">Lesson 8 Slides</a>	<a href="#">Lesson 9 Slides</a>	<a href="#">Lesson 10 Slides</a>	<a href="#">Lesson 11 Slides</a>	<a href="#">Lesson 12 Slides</a>	<a href="#">Lesson 13 Slides</a>	<a href="#">Lesson 14 Slides</a>	<a href="#">Lesson 15 Slides</a>
	<a href="#">Teacher Presentation Materials</a>	<a href="#">Teacher Presentation Materials</a>	<a href="#">Teacher Presentation Materials</a>	<a href="#">Teacher Presentation Materials</a>	<a href="#">Teacher Presentation Materials</a>	<a href="#">Teacher Presentation Materials</a>	<a href="#">Teacher Presentation Materials</a>	<a href="#">Teacher Presentation Materials</a>	<a href="#">Teacher Presentation Materials</a>
	<a href="#">Student Pages</a>	<a href="#">Student Pages</a>	<a href="#">Student Pages</a>	<a href="#">Student Pages</a>	<a href="#">Student Pages</a>	<a href="#">Student Pages</a>	<a href="#">Student Pages</a>	<a href="#">Student Pages</a>	<a href="#">Student Pages</a>
	<b>Activity 2:</b> <ul style="list-style-type: none"> <li>● Give students glue and scissors.</li> </ul>	No copied materials needed for activities	<b>Activity 1:</b> <ul style="list-style-type: none"> <li>● *Place the <a href="#">Add or Subtract Number Line</a> recording sheets in sheet protectors</li> <li>● Give each student a copy of the <a href="#">Add or Subtract Number Line</a>.</li> <li>● Give students access to base-ten blocks.</li> </ul> <b>Activity 2:</b> <ul style="list-style-type: none"> <li>● Give each student a copy of the</li> </ul>	<b>Activity 1:</b> <ul style="list-style-type: none"> <li>● Give students access to base-ten blocks.</li> </ul> <b>Activity 2:</b> <ul style="list-style-type: none"> <li>● Give students access to base-ten blocks.</li> </ul>	<b>Activity 1:</b> <ul style="list-style-type: none"> <li>● Give each student a copy of the <a href="#">Compare Methods Number Line</a></li> </ul> <b>Activity 2:</b> <ul style="list-style-type: none"> <li>● Give each student a copy of the <a href="#">More Methods Number Line</a></li> <li>● Give students access to base-ten blocks.</li> </ul>	<b>Activity 1:</b> <ul style="list-style-type: none"> <li>● Give each student a copy of the <a href="#">Riddle Number Line</a></li> </ul> <b>Activity 2:</b> <ul style="list-style-type: none"> <li>● Give each student a copy of the <a href="#">Make the Equation True Number Line</a></li> </ul>	<b>Activity 1:</b> <ul style="list-style-type: none"> <li>● Each group gets a copy of the <a href="#">Story Problems Card Sort</a> (stories, equations, number lines, diagrams)</li> </ul> <b>Activity 2:</b> <ul style="list-style-type: none"> <li>● Give each student access to the <a href="#">All Kinds of Access Number Line</a></li> </ul>	<b>Activity 1:</b> <ul style="list-style-type: none"> <li>● Give each group a <a href="#">Jump the Line Stage 1 Spinners</a>, paper clip, dry erase marker and <a href="#">Jump the Line Stage 1 Gameboard</a>.</li> </ul> <b>Activity 2:</b> <ul style="list-style-type: none"> <li>● Centers - see below</li> </ul>	<b>Activity 1:</b> <ul style="list-style-type: none"> <li>● Give each student a copy of the <a href="#">Kiran's Age Riddle Number Line</a></li> </ul> <b>Activity 2:</b> <ul style="list-style-type: none"> <li>● Give each student a copy of the <a href="#">Write Riddles Number Line</a></li> </ul>

	<a href="#">Cool-down: Addition and Subtraction Expressions on a Number Line</a>	<a href="#">Cool-down: Represent Addition and Subtraction on the Number Line</a>	<a href="#">Difference Number Line</a> <a href="#">Cool-down: What's the Difference?</a>	<a href="#">Cool-down: Subtract on the Number Line</a>	<a href="#">Cool-down: Sums and Differences</a>	<a href="#">Cool-down: Jumps on the Number Line</a>	<a href="#">Cool-down: Clare's Train</a>		
Assessment	Formative Assessment Strategies: observation, questioning, student discourse : <a href="#">Monitoring Sheet</a> See <a href="#">Section B Checkpoint Assessment</a> , <a href="#">Section B Checkpoint Teacher's Guide</a> <a href="#">End of Unit 4 Assessment</a> , <a href="#">End of Unit 4 Assessment Teacher's Guide</a>								
									<a href="#">Section B Practice Problems</a>
Centers Materials	<a href="#">Number Puzzles: Addition and Subtraction (1-4)</a> , Stage 4: Within 100 with Composing (Addressing) <a href="#">Number Line Scoot (2-3)</a> , Stage 1: Twos, Fives, and Tens (Addressing)	<a href="#">Number Puzzles: Addition and Subtraction (1-4)</a> , Stage 4: Within 100 with Composing (Addressing) <a href="#">Number Line Scoot (2-3)</a> , Stage 1: Twos, Fives, and Tens (Addressing)	<a href="#">Number Puzzles: Addition and Subtraction (1-4)</a> , Stage 4: Within 100 with Composing (Addressing) <a href="#">Number Line Scoot (2-3)</a> , Stage 1: Twos, Fives, and Tens (Addressing)	<a href="#">Number Puzzles: Addition and Subtraction (1-4)</a> , Stage 4: Within 100 with Composing (Addressing) <a href="#">Number Line Scoot (2-3)</a> , Stage 1: Twos, Fives, and Tens (Addressing)	<a href="#">Number Puzzles: Addition and Subtraction (1-4)</a> , Stage 4: Within 100 with Composing (Addressing) <a href="#">Number Line Scoot (2-3)</a> , Stage 1: Twos, Fives, and Tens (Addressing)	<a href="#">Number Puzzles: Addition and Subtraction (1-4)</a> , Stage 4: Within 100 with Composing (Addressing) <a href="#">Number Line Scoot (2-3)</a> , Stage 1: Twos, Fives, and Tens (Addressing)	<a href="#">Number Puzzles: Addition and Subtraction (1-4)</a> , Stage 4: Within 100 with Composing (Addressing) <a href="#">Number Line Scoot (2-3)</a> , Stage 1: Twos, Fives, and Tens (Addressing)	<a href="#">Jump the Line (2-5)</a> , Stage 1: Add and Subtract within 100 (Addressing) <a href="#">Number Line Scoot (2-3)</a> , Stage 1: Twos, Fives, and Tens (Addressing) <a href="#">How Close? (1-5)</a> , Stage 3: Add to 100 (Supporting)	<a href="#">Jump the Line (2-5)</a> , Stage 1: Add and Subtract within 100 (Addressing) <a href="#">Number Line Scoot (2-3)</a> , Stage 1: Twos, Fives, and Tens (Addressing) <a href="#">How Close? (1-5)</a> , Stage 3: Add to 100 (Supporting)

## **Making Meaning**

In previous lessons, students learned that whole numbers can be represented by tick marks and points on the number line. They learned that numbers farther to the right on a number line are greater than those to the left. In Lesson 7, students build on that understanding to connect representations that use an arrow to show moving from one number to another on the number line (“jumps”) to the operations of addition and subtraction. Students match equations and number line representations and explain how they know they match (MP2, MP7).

In Lesson 8, students write equations based on number line representations and represent given equations on number lines.

In Lesson 9, students deepen their understanding of subtraction as taking from and as an unknown addend problem. Students represent subtraction methods on the number line and compare how each representation shows the difference. The number line is also used to help students visualize when counting on and counting back strategies may be useful when subtracting 2 two-digit numbers. For example,  $17-14$  can be solved by starting at 17 and counting back 14. It can also be solved by starting at 14 and counting on 3. In this case, counting on would likely be helpful because the numbers are close together and the structure of the number line helps show why this strategy is effective (MP7).

### **Lesson 7: [Addition and Subtraction on the Number Line](#)**

- The purpose of this lesson is for students to attend to the direction of the arrow on the number line to match addition and subtraction expressions.
- [Lesson 7 Slides](#)
- [Teacher Presentation Materials](#)

### **Lesson 8 : [Equations on a Number Line](#)**

- The purpose of this lesson is for students to write equations based on number lines and represent equations on the number line.
- [Lesson 8 Slides](#)
- [Teacher Presentation Materials](#)

### **Lesson 9: [The Difference Between Numbers](#)**

- The purpose of this lesson is for students to represent and compare different subtraction methods on the number line.
- [Lesson 9 Slides](#)
- [Teacher Presentation Materials](#)

## **Investigation:**

In Lesson 10, students add and subtract within 100 and represent computation methods on a number line. They compare representations of methods based on place value and make connections across representations (MP2). The expressions in each activity include numbers that elicit methods based on counting on or counting back by place.

In Lesson 11, students use the number line to represent these methods. These methods do not require students to explicitly compose or decompose a ten. The number line helps students see how others use what they know about the structure of whole numbers, properties of operations, and place value (MP7) to add and subtract within 100. The number choices in the expressions used in this lesson are designed to elicit methods based on looking for ways to make a ten or get to a ten. However, many students may prefer to use other strategies or representations, such as base-ten blocks or diagrams, to find the values. Look for ways to connect these students with peers who use different methods and can explain why they chose their method based on what they noticed about the numbers in the expressions.

In Lesson 12, students find the number that makes addition and subtraction equations true within 100 in equations with unknowns in all positions. They continue to think about the relationships between the numbers in each equation and reason about how they can use the structure of the number line, the relationship between addition and subtraction, and their understanding of place value to find the number that makes each equation true (MP7). The context of the first activity encourages all students to reason with the number line. In the second activity, students may use the methods and representations that make the most sense to them. The work of this lesson helps students make sense of the way the number line can be used to represent and solve story problems which will be useful in upcoming lessons.

In Lesson 13, students interpret multiple representations and match them to story problems. In the first activity students are not asked to solve the problems. This allows them to focus on how each problem can be represented in different ways, rather than finding the solution. In the second activity, students are given diagrams to complete, but they can find the solution in any way that makes sense to them. They are also given the option to use a number line if it helps.

In Lesson 14, Activity 1, students learn stage 1 of the Jump the Line center. In this new center, students take turns making strategic choices about numbers to add or subtract to reach target numbers. In Activity 2, students choose to continue working on Jump the Line, or choose between two previously introduced centers focused on addition and subtraction.

#### **Lesson 10: [Place Value and the Number Line](#)**

- The purpose of this lesson is for students to compare representations of addition and subtraction methods represented on the number line.
- [Lesson 10 Slides](#)
- [Teacher Presentation Materials](#)

#### **Lesson 11: [Different Ways to Add and Subtract](#)**

- The purpose of this lesson is for students to represent sums and differences on the number line with an emphasis on the strategy of using a ten to count up or count back.
- [Lesson 11 Slides](#)
- [Teacher Presentation Materials](#)

#### **Lesson 12: [Equations with Unknowns](#)**

- The purpose of this lesson is for students to represent equations with an unknown in all positions on the number line and find the unknown values.
- [Lesson 12 Slides](#)
- [Teacher Presentation Materials](#)

**Lesson 13: [Represent Story Problems](#)**

- The purpose of this lesson is for students to make connections between different representations of situations for sums and differences.
- [Lesson 13 Slides](#)
- [Teacher Presentation Materials](#)

**Lesson 14: [Center Day 2 \(optional\)](#)**

- The purpose of this lesson is for students to practice adding and subtracting within 100 and representing addition and subtraction on the number line.
- [Lesson 14 Slides](#)
- [Teacher Presentation Materials](#)

**Create and Produce:**

In Lesson 15, students apply previous understandings of the methods and representations for addition and subtraction problems within 100 to write and solve their own real-world problems. Students are encouraged to use the number line to represent the ages and solve problems. In the first activity, they become familiar with the context by solving problems about ages using any method that makes sense to them. In the second activity, they write their own problems about the ages of people they know, represent the problems, and solve them. Also in this lesson, when students decide what quantities are important in a real-world situation, use these quantities to develop their own story problems, and choose math that matches a simplified situation, they build the precursor skills they need to model with mathematics (MP4).

**Lesson 15, Activity 2:** The purpose of this activity is for students to write their own number riddles involving people’s ages. Keep the mathematical questions from the synthesis displayed for students if they need ideas for riddles.

“You will use people you know and their ages to come up with mathematical questions to ask your partner. If you don’t know the person’s age for sure, make a good estimate to use.”

“You can use Kiran's riddles to help. You can locate the age of each person you plan to use on your number line if it helps you plan your questions.

**Lesson 15: [Riddles \(optional\)](#)**

- The purpose of this lesson is for students to generate their own addition and subtraction stories, and use the number line as a tool to write and solve story problems.

- [Lesson 15 Slides](#)
- [Teacher Presentation Materials](#)

**Communicate and Present:  
Lesson 15, Activity 2:**

- Invite previously selected students to share.
- “Did you find any problems that were challenging to solve? What made it challenging?”

**Reflection:**

“Today we worked to write, represent, and solve real-world problems about ages.”

“How could you explain to a friend how they could take some ages and make up their own addition and subtraction problems?”

“How would you suggest they solve them?”

**Notes: Follow IM lessons in order.**

**Complete File with Resources and Task:**