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GRADE 2 • MODULE 1

Sums and Differences to 100

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Grade 2 • Module 1
Sums and Differences to 100

OVERVIEW

Module 1 sets the foundation for students to master sums and differences to 20 (2.OA.2). Students subsequently apply these skills to fluently add one-digit to two-digit numbers at least through 100 using place value understanding, properties of operations, and the relationship between addition and subtraction (2.NBT.5). In Grade 1, students worked extensively with numbers to gain fluency with sums and differences within 10 (1.OA.5) and became proficient in counting on (a Level 2 strategy). They also began to make easier problems to add and subtract within 20 and 100 by making ten and taking from ten (Level 3 strategies) (1.OA.6, 1.NBT.4–6).¹

In Module 1, students advance from Grade 1’s subtraction of a multiple of ten to a new complexity, subtracting single-digit numbers from both multiples of ten (e.g., 40 – 9) and from any two-digit number within 100 (e.g., 41 – 9).

| 40 – 9 = 31 | 41 – 9 = 32 |
| 30 + 1 = 31 | 31 + 1 = 32 |

Topic A’s two lessons are devoted solely to the important practice of fluency, the first lesson working within 20 and the second extending the same fluencies to numbers within 100. Topic A reactivates students’ Kindergarten and Grade 1 learning as they energetically practice the following prerequisite skills for Level 3 decomposition and composition methods:

- decompositions of numbers within ten² (e.g., 0 + 7, 1 + 6, 2 + 5, and 3 + 4, all equal seven).
- partners to ten³ (e.g., 10 and 0, 9 and 1, 8 and 2, 7 and 3, 6 and 4, 5 and 5, and “I know 8 needs 2 to make ten”).
- tens plus sums⁴ (e.g., 10 + 9, 10 + 8).

¹See the Progression Documents “K, Counting and Cardinality” and “K-5, Operations and Algebraic Thinking” pp. 36 and 39, respectively.
²K.OA.3; 1.OA.6
³K.OA.4
⁴K.NBT.1; 1.NBT.2b
For example, students quickly remember make ten facts. They then immediately use those facts to solve problems with larger numbers (e.g., “I know 8 needs 2 to make 10, so 58 needs 2 to make 60 tens or sixty!”). Lessons 1 and 2 include Sprints that bring back automaticity with the tens plus sums, which are foundational for adding within 100 and expanded form (e.g., “I know 10 + 8 = 18, so 40 + 8 = 48”).

Topic B takes Grade 1’s work to a new level of fluency as students make easier problems to add and subtract within 100 by using the number system’s base ten structure. The topic begins with students using place value understanding to solve problems by adding and subtracting like units (e.g., “I know 8 – 5 = 3, so 87 – 50 = 37 because 8 tens – 5 tens = 3 tens. I know 78 – 5, too, because 8 ones – 5 ones = 3 ones. I used the same easier problem, 8 – 5 = 3, just with ones instead of tens!”). Students then practice making ten within 20 before generalizing that strategy to numbers within 100 (e.g., “I know 9 + 6 = 15, so 79 + 6 = 85, and 89 + 6 = 95”).

The preceding lessons segue beautifully into the new concepts of Topic B, subtracting single-digit numbers from two-digit numbers greater than 20. In Lesson 6, students use the familiar take from ten strategy to subtract single-digit numbers from multiples of ten (e.g., 60 – 8, as shown below). In Lesson 7, students practice taking from ten within 20 when there is the complexity of some ones in the total (e.g., 13 – 8, as shown below). In Lesson 8, they then subtract single-digit numbers from 2-digit numbers within 100 when there are also some ones (e.g., 63 – 8, as shown below).

<table>
<thead>
<tr>
<th>Lesson 6</th>
<th>Lesson 7</th>
<th>Lesson 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>60 – 8 = 52</td>
<td>13 – 8 = 5</td>
<td>63 – 8 = 55</td>
</tr>
<tr>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>50 10</td>
<td>3 10</td>
<td>53 10</td>
</tr>
<tr>
<td>10 – 8 = 2</td>
<td>10 – 8 = 2</td>
<td>10 – 8 = 2</td>
</tr>
<tr>
<td>50 + 2 = 52</td>
<td>3 + 2 = 5</td>
<td>53 + 2 = 55</td>
</tr>
</tbody>
</table>

**Decompose and Subtract From Ten**

These strategies deepen place value understandings in preparation for Module 3 and the application of those understandings to addition and subtraction in Modules 4 and 5. Listen to how the language of make ten and take from ten is foundational to the work of later modules:

**Module 3:** “I have 10 tens, so I can make a hundred. It’s just like I can make a ten when I have 10 ones.”

**Module 5:** “When I solve 263 – 48, I take a ten from 6 tens to make 5 tens and 13 ones. Now, I am ready to subtract in the ones place” (pictured to the right).

Note that mastery of sums and differences within 100 is not to be expected in Module 1 but rather by Module 8. Because the amount of practice required by each student to achieve mastery prior to Grade 3 will vary, a motivating, differentiated fluency program needs to be established in these first 2 weeks to set the tone for the year.
In Grade 2 Module 1, Application Problems begin in Topic B. They contextualize learning as students apply strategies to solving simple **add to, take from, put together/take apart** problem types using the Read-Draw-Write, or RDW, process (2.OA.1). Application Problems may precede the Concept Development to act as the lead-in, allowing students to discover through problem-solving the logic and usefulness of a strategy before it is formally presented. Or, problems may follow the Concept Development so that students connect and apply new learning to real-world situations. At the beginning of Grade 2, problem-solving may begin more as a guided activity, with the goal being to move students to independent problem-solving, wherein they reason through the relationships embedded within the problem and choose an appropriate strategy to solve (MP.5).

**Notes on Pacing for Differentiation**

It is not recommended to modify or omit any lessons in Module 1.

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**Focus Grade Level Standards**

**Represent and solve problems involving addition and subtraction.**

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

**Add and subtract within 20.**

2.OA.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.

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5 From this point forward, fluency practice with addition and subtraction to 20 is part of the students’ ongoing experience.
Use place value understanding and properties of operations to add and subtract. 7

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.

Foundational Standards

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).

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.

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.

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

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).

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.

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.

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.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.

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7The balance of this cluster is addressed in Modules 4 and 5.
Focus Standards for Mathematical Practice

**MP.2** Reason abstractly and quantitatively. Students reason abstractly when they decontextualize a word problem, representing a situation with a number sentence (e.g., *Mark had a stick of 9 green linking cubes. His friend gave him 4 yellow linking cubes. How many linking cubes does Mark have now?*). In their solutions, students write $9 + 4 = 13$. In so doing, they have decontextualized the quantity from the situation. They then contextualize the solution when they write a statement of the answer (e.g., “Mark has 13 linking cubes now”). They reason that the 13 refers to the quantity, or number, of linking cubes.

**MP.5** Use appropriate tools strategically. As students become more comfortable with tools and make ten/take from ten strategies, they begin to make smart decisions about when these tools might be useful to solve various problems.

**MP.7** Look for and make use of structure. Students use the structure of the place value system to add and subtract like units within 100 (e.g., “I know $8 - 5 = 3$, so $87 - 50 = 37$ because 8 tens – 5 tens = 3 tens. I know 78 – 5, too, because 8 ones – 5 ones = 3 ones. I used the same easier problem, 8 – 5 = 3, just with ones instead of tens!”).

**MP.8** Look for and express regularity in repeated reasoning. In order to use the make ten and take from ten strategies efficiently, students practice completing a unit of ten during fluency in many ways (e.g., the teacher flashes a ten-frame and students identify the missing part). This skill is applied throughout the module. For example, students see the repeated reasoning of taking from ten in Lessons 6, 7, and 8 to subtract single-digit numbers. Whether solving $30 - 9$, $13 - 9$, or $31 - 9$, they take out the ten, subtract 9 from 10, and put together the parts that are left (see image below).

![Image of 10-frame with numbers 20 and 10, and a note: Just subtract 9 from 10. $10 - 9 = 1$.]

10 – 9 = 1
20 + 1 = 21
# Overview of Module Topics and Lesson Objectives

<table>
<thead>
<tr>
<th>Standards</th>
<th>Topics and Objectives</th>
<th>Days</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A</strong></td>
<td><strong>Foundations for Fluency with Sums and Differences Within 100</strong></td>
<td></td>
</tr>
<tr>
<td>2.OA.2</td>
<td>Lesson 1: Practice making ten and adding to ten.</td>
<td>2</td>
</tr>
<tr>
<td>K.OA.3</td>
<td>Lesson 2: Practice making the next ten and adding to a multiple of ten.</td>
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<tr>
<td>K.OA.4</td>
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<tr>
<td>K.NBT.1</td>
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<tr>
<td>1.NBT.2b</td>
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<tr>
<td>1.OA.5</td>
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<td>1.OA.6</td>
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<tr>
<td><strong>B</strong></td>
<td><strong>Initiating Fluency with Addition and Subtraction Within 100</strong></td>
<td>6</td>
</tr>
<tr>
<td>2.OA.1</td>
<td>Lesson 3: Add and subtract like units.</td>
<td></td>
</tr>
<tr>
<td>2.OA.2</td>
<td>Lesson 4: Make a ten to add within 20.</td>
<td></td>
</tr>
<tr>
<td>2.NBT.5</td>
<td>Lesson 5: Make a ten to add within 100.</td>
<td></td>
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<tr>
<td>1.NBT.4</td>
<td>Lesson 6: Subtract single-digit numbers from multiples of 10 within 100.</td>
<td></td>
</tr>
<tr>
<td>1.NBT.5</td>
<td>Lesson 7: Take from ten within 20.</td>
<td></td>
</tr>
<tr>
<td>1.NBT.6</td>
<td>Lesson 8: Take from ten within 100.</td>
<td></td>
</tr>
<tr>
<td><strong>End-of-Module Assessment:</strong> Topics A–B (assessment 1 day, return ½ day, remediation or further applications ½ day)</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td><strong>Total Number of Instructional Days</strong></td>
<td><strong>10</strong></td>
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</tbody>
</table>
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)
- Part (e.g., “What is the unknown part? $3 + ___ = 8$”)
- 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., $10 + 3 = 13, 10 + 5 = 15, 10 + 8 = 18$)
- Total (e.g., for $3 + 4 = 7$ or $7 - 4 = 3$, seven is the whole, or total)

Suggested Tools and Representations

- 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)

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8These are terms and symbols students have seen previously.
Suggested Methods of Instructional Delivery

Directions for Administration of Sprints

Sprints are designed to develop fluency. They should be fun, adrenaline-rich activities that intentionally build energy and excitement. A fast pace is essential. During Sprint administration, teachers assume the role of athletic coaches. A rousing routine fuels students’ motivation to do their personal best. Student recognition of increasing success is critical, and so every improvement is celebrated.

One Sprint has two parts with closely related problems on each. Students complete the two parts of the Sprint in quick succession with the goal of improving on the second part, even if only by one more.

With practice the following routine takes about 8 minutes.

Sprint A

Pass Sprint A out quickly, face down on student desks with instructions to not look at the problems until the signal is given. (Some Sprints include words. If necessary, prior to starting the Sprint, quickly review the words so that reading difficulty does not slow students down.)

T: You will have 60 seconds to do as many problems as you can.
T: I do not expect you to finish all of them. Just do as many as you can, your personal best. (If some students are likely to finish before time is up, assign a number to count by on the back.)
T: Take your mark! Get set! THINK! (When you say THINK, students turn their papers over and work furiously to finish as many problems as they can in 60 seconds. Time precisely.)
T: Stop! Circle the last problem you did. I will read just the answers. If you got it right, call out “Yes!” If you made a mistake, circle it. Ready?
T: (Energetically, rapid-fire call the first answer.)
S: Yes!
T: (Energetically, rapid-fire call the second answer.)
S: Yes!
Repeat to the end of Sprint A or until no one has any more correct. If need be, read the count-by answers in the same way the Sprint answers were read. Each number counted by on the back is considered a correct answer.

T: Fantastic! Now, write the number you got correct at the top of your page. This is your personal goal for Sprint B.
T: How many of you got 1 right? (All hands should go up.)
T: Keep your hand up until I say the number that is 1 more than the number you got right. So, if you got 14 correct, when I say 15 your hand goes down. Ready?
T: (Quickly.) How many got 2 correct? 3? 4? 5? (Continue until all hands are down.)

Optional routine, depending on whether or not the class needs more practice with Sprint A:

T: I’ll give you one minute to do more problems on this half of the Sprint. If you finish, stand behind your chair. (As students work, the person who scored highest on Sprint A could pass out Sprint B.)
T: Stop! I will read just the answers. If you got it right, call out “Yes!” If you made a mistake, circle it. Ready? (Read the answers to the first half again as students stand.)
Movement

To keep the energy and fun going, always do a stretch or a movement game in between Sprints A and B. For example, the class might do jumping jacks while skip counting by 5 for about 1 minute. Feeling invigorated, students take their seats for Sprint B, ready to make every effort to complete more problems this time.

Sprint B

Pass Sprint B out quickly, face down on student desks with instructions not to look at the problems until the signal is given. (Repeat the procedure for Sprint A up through the show of hands for how many are right.)

T: Stand up if you got more correct on the second Sprint than on the first.
S: (Stand.)
T: Keep standing until I say the number that tells how many more you got right on Sprint B. So, if you got 3 more right on Sprint B than you did on Sprint A, when I say 3, you sit down. Ready? (Call out numbers starting with 1. Students sit as the number by which they improved is called. Celebrate the students who improved most with a cheer.)
T: Well done! Now, take a moment to go back and correct your mistakes. Think about what patterns you noticed in today’s Sprint.
T: How did the patterns help you get better at solving the problems?
T: Rally Robin your thinking with your partner for 1 minute. Go!

Rally Robin is a style of sharing in which partners trade information back and forth, one statement at a time per person, for about 1 minute. This is an especially valuable part of the routine for students who benefit from their friends’ support to identify patterns and try new strategies.

Students may take Sprints home.

RDW or Read, Draw, Write (a Number Sentence and a Statement)

Mathematicians and teachers suggest a simple process applicable to all grades:

1. Read.
2. Draw and label.
3. Write a number sentence.
4. Write a word sentence (statement).

The more students participate in reasoning through problems with a systematic approach, the more they internalize those behaviors and thought processes.

- What do I see?
- Can I draw something?
- What conclusions can I make from my drawing?
### Modeling with Interactive Questioning

The teacher models the whole process with interactive questioning, some choral response, and talk such as “What did Monique say, everyone?” After completing the problem, students might reflect with a partner on the steps they used to solve the problem. “Students, think back on what we did to solve this problem. What did we do first?” Students might then be given the same or a similar problem to solve for homework.

### Guided Practice

Each student has a copy of the question. Though guided by the teacher, they work independently at times and then come together again. Timing is important. Students might hear, “You have 2 minutes to do your drawing.” Or, “Put your pencils down. Time to work together again.” The Debrief might include selecting different student work to share.

### Independent Practice

The students are given a problem to solve and possibly a designated amount of time to solve it. The teacher circulates, supports, and thinks about which student work to show to support the mathematical objectives of the lesson. When sharing student work, students are encouraged to think about the work with questions such as, “What do you notice about Jeremy’s work?” “What is the same about Jeremy’s work and Sara’s work?”

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### Personal White Boards

#### Materials Needed for Personal White Boards

- 1 heavy duty, clear sheet protector
- 1 piece of stiff red tag board 11” × 8 ¼”
- 1 piece of stiff white tag board 11” × 8 ¼”
- 1 3” × 3” piece of dark synthetic cloth for an eraser (e.g., felt)
- 1 low odor dry erase marker: fine point

#### Directions for Creating Personal White Boards

Cut the white and red tag to specifications. Slide into the sheet protector. Store the eraser on the red side. Store markers in a separate container to avoid stretching the sheet protector.

#### Frequently Asked Questions About Personal White Boards

**Why is one side red and one white?**

- The white side of the board is the “paper.” Students generally write on it and if working individually, then turn the board over to signal to the teacher that they have completed their work. The teacher then says, “Show me your boards,” when most of the class is ready.

**What are some of the benefits of a personal white board?**

- The teacher can respond quickly to gaps in student understandings and skills. “Let’s do some of these on our personal boards until we have more mastery.”
- Student can erase quickly so that they do not have to suffer the evidence of their mistake.
They are motivating. Students love both the drill and thrill capability and the chance to do story problems with an engaging medium.

Checking work gives the teacher instant feedback about student understanding.

What is the benefit of this personal white board over a commercially purchased dry erase board?

- It is much less expensive.
- Templates such as place value charts, number bond mats, hundreds boards, and number lines can be stored between the two pieces of tag for easy access and reuse.
- Worksheets, story problems, and other problem sets can be done without marking the paper so that students can work on the problems independently at another time.
- Strips with story problems, number lines, and arrays can be inserted and still have a full piece of paper on which to write.
- The red versus white side distinction clarifies expectations. When working collaboratively, there is no need to use the red side. When working independently, students know how to keep their work private.
- The sheet protector can be removed if necessary to project the work.

Scaffolds

The scaffolds integrated into A Story of Units give alternatives for how students access information as well as express and demonstrate their learning. Strategically placed margin notes are provided within each lesson elaborating on the use of specific scaffolds at applicable times. They address many needs presented by English language learners, students with disabilities, students performing above grade level, and students performing below grade level. Many of the suggestions are organized by Universal Design for Learning (UDL) principles and are applicable to more than one population. To read more about the approach to differentiated instruction in A Story of Units, please refer to “How to Implement A Story of Units.”

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9 Students with disabilities may require Braille, large print, audio, or special digital files. Please visit the website www.p12.nysed.gov/specialed/aim for specific information on how to obtain student materials that satisfy the National Instructional Materials Accessibility Standard (NIMAS) format.
Preparing to Teach a Module

Preparation of lessons will be more effective and efficient if there has been an adequate analysis of the module first. Each module in A Story of Units can be compared to a chapter in a book. How is the module moving the plot, the mathematics, forward? What new learning is taking place? How are the topics and objectives building on one another? The following is a suggested process for preparing to teach a module.

Step 1: Get a preview of the plot.

A: Read the Table of Contents. At a high level, what is the plot of the module? How does the story develop across the topics?

B: Preview the module’s Exit Tickets to see the trajectory of the module’s mathematics and the nature of the work students are expected to be able to do.

Note: When studying a PDF file, enter “Exit Ticket” into the search feature to navigate from one Exit Ticket to the next.

Step 2: Dig into the details.

A: Dig into a careful reading of the Module Overview. While reading the narrative, liberally reference the lessons and Topic Overviews to clarify the meaning of the text—the lessons demonstrate the strategies, show how to use the models, clarify vocabulary, and build understanding of concepts. Consider searching the video gallery on Eureka Math’s website to watch demonstrations of the use of models and other teaching techniques.

B: Having thoroughly investigated the Module Overview, read through the chart entitled Overview of Module Topics and Lesson Objectives to further discern the plot of the module. How do the topics flow and tell a coherent story? How do the objectives move from simple to complex?

Step 3: Summarize the story.

Complete the Mid- and End-of-Module Assessments. Use the strategies and models presented in the module to explain the thinking involved. Again, liberally reference the work done in the lessons to see how students who are learning with the curriculum might respond.

A more in-depth preview can be done by searching the Problem Sets rather than the Exit Tickets. Furthermore, this same process can be used to preview the coherence or flow of any component of the curriculum, such as Fluency Practice or Application Problems.
Preparing to Teach a Lesson

A three-step process is suggested to prepare a lesson. It is understood that at times teachers may need to make adjustments (customizations) to lessons to fit the time constraints and unique needs of their students. The recommended planning process is outlined below. Note: The ladder of Step 2 is a metaphor for the teaching sequence. The sequence can be seen not only at the macro level in the role that this lesson plays in the overall story, but also at the lesson level, where each rung in the ladder represents the next step in understanding or the next skill needed to reach the objective. To reach the objective, or the top of the ladder, all students must be able to access the first rung and each successive rung.

Step 1: Discern the plot.

A: Briefly review the module’s Table of Contents, recalling the overall story of the module and analyzing the role of this lesson in the module.

B: Read the Topic Overview related to the lesson, and then review the Problem Set and Exit Ticket of each lesson in the topic.

C: Review the assessment following the topic, keeping in mind that assessments can be found midway through the module and at the end of the module.

Step 2: Find the ladder.

A: Complete the lesson’s Problem Set.

B: Analyze and write notes on the new complexities of each problem as well as the sequences and progressions throughout problems (e.g., pictorial to abstract, smaller to larger numbers, single- to multi-step problems). The new complexities are the rungs of the ladder.

C: Anticipate where students might struggle, and write a note about the potential cause of the struggle.

D: Answer the Student Debrief questions, always anticipating how students will respond.

Step 3: Hone the lesson.

At times, the lesson and Problem Set are appropriate for all students and the day’s schedule. At others, they may need customizing. If the decision is to customize based on either the needs of students or scheduling constraints, a suggestion is to decide upon and designate “Must Do” and “Could Do” problems.

A: Select “Must Do” problems from the Problem Set that meet the objective and provide a coherent experience for students; reference the ladder. The expectation is that the majority of the class will complete the “Must Do” problems within the allocated time. While choosing the “Must Do” problems, keep in mind the need for a balance of calculations, various word problem types, and work at both the pictorial and abstract levels.

11See the Progression Documents “K, Counting and Cardinality” and “K–5, Operations and Algebraic Thinking” pp. 9 and 23, respectively.
B: “Must Do” problems might also include remedial work as necessary for the whole class, a small group, or individual students. Depending on anticipated difficulties, those problems might take different forms as shown in the chart below.

<table>
<thead>
<tr>
<th>Anticipated Difficulty</th>
<th>“Must Do” Remedial Problem Suggestion</th>
</tr>
</thead>
<tbody>
<tr>
<td>The first problem of the Problem Set is too challenging.</td>
<td>Write a short sequence of problems on the board that provides a ladder to Problem 1. Direct the class or small group to complete those first problems to empower them to begin the Problem Set. Consider labeling these problems “Zero Problems” since they are done prior to Problem 1.</td>
</tr>
<tr>
<td>There is too big of a jump in complexity between two problems.</td>
<td>Provide a problem or set of problems that creates a bridge between the two problems. Label them with the number of the problem they follow. For example, if the challenging jump is between Problems 2 and 3, consider labeling the bridging problems “Extra 2s.”</td>
</tr>
<tr>
<td>Students lack fluency or foundational skills necessary for the lesson.</td>
<td>Before beginning the Problem Set, do a quick, engaging fluency exercise, such as a Rapid White Board Exchange, “Thrilling Drill,” or Sprint. Before beginning any fluency activity for the first time, assess that students are poised for success with the easiest problem in the set.</td>
</tr>
<tr>
<td>More work is needed at the concrete or pictorial level.</td>
<td>Provide manipulatives or the opportunity to draw solution strategies. Especially in Kindergarten, at times the Problem Set or pencil and paper aspect might be completely excluded, allowing students to simply work with materials.</td>
</tr>
<tr>
<td>More work is needed at the abstract level.</td>
<td>Hone the Problem Set to reduce the amount of drawing as appropriate for certain students or the whole class.</td>
</tr>
</tbody>
</table>

C: “Could Do” problems are for students who work with greater fluency and understanding and can, therefore, complete more work within a given time frame. Adjust the Exit Ticket and Homework to reflect the “Must Do” problems or to address scheduling constraints.

D: At times, a particularly tricky problem might be designated as a “Challenge!” problem. This can be motivating, especially for advanced students. Consider creating the opportunity for students to share their “Challenge!” solutions with the class at a weekly session or on video.

E: Consider how to best use the vignettes of the Concept Development section of the lesson. Read through the vignettes, and highlight selected parts to be included in the delivery of instruction so that students can be independently successful on the assigned task.

F: Pay close attention to the questions chosen for the Student Debrief. Regularly ask students, “What was the lesson’s learning goal today?” Help them articulate the goal.
## Assessment Summary

<table>
<thead>
<tr>
<th>Type</th>
<th>Administered</th>
<th>Format</th>
<th>Standards Addressed</th>
</tr>
</thead>
</table>
| End-of-Module Assessment Task       | After Topic C | Constructed response with rubric | 2.OA.1  
|                                     |               |                               | 2.OA.2  
|                                     |               |                               | 2.NBT.5  |