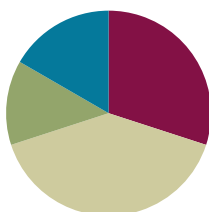


## Lesson 2

**Objective:** Count up and down between 100 and 220 using ones and tens.

### Suggested Lesson Structure

■ Fluency Practice	(18 minutes)
■ Application Problem	(8 minutes)
■ Concept Development	(24 minutes)
■ Student Debrief	(10 minutes)
<b>Total Time</b>	<b>(60 minutes)</b>



### Fluency Practice (18 minutes)

- Meter Strip Subtraction: Taking Multiples of 10 from Numbers 10–100 **2.MD.6, 2.NBT.5** (4 minutes)
- Measure and Compare **2.MD.4** (6 minutes)
- Skip-Count Up and Down by Fives on the Clock **2.NBT.2** (4 minutes)
- Counting with Ones, Tens, and Hundreds: 0 to 1,000 **2.NBT.8** (4 minutes)

### Meter Strip Subtraction: Taking Multiples of 10 from Numbers 10–100 (4 minutes)

Materials: (S) Meter strip (Lesson 1 Fluency Template)

Keep students challenged and engaged by adding a new layer of complexity to the game in this second round. The following are suggestions for how you might adapt the sequence demonstrated in Lesson 1 to match your students' ability level. Suggestions are given in order from least to most complex.

- Subtract 9 and then 8 from multiples of 10 up to 100.
- Subtract any two-digit number from a multiple of 10 up to 100 (e.g.,  $30 - 13$ ,  $40 - 24$ ,  $60 - 45$ ).
- Tell or write a number sentence describing sliding down from the whole amount (e.g.,  $50 - 10 = 40$  cm).
- Create a sequence of *change unknown* slides. For example:  
 T: Start with your finger on 0. Slide up to 52 cm.  
 T: Now, slide down to 49. How many centimeters did you slide down?  
 S: 3 cm!
- Tell or write a problem to describe the *change unknown* slide (e.g.,  $52 - \underline{\quad} = 49$  cm).
- State that change in a sentence, including the unit. "I slid down        centimeters."

## Measure and Compare (6 minutes)

Materials: (S) Meter strip (Lesson 1 Fluency Template), personal white board

- T: (Write or post the sentence frame described in the box shown to the right.) I'll name two objects, you measure their lengths. Your goal is to determine how much longer one object is than another. Write the lengths on your personal white board so that you don't forget, and be sure to state the unit when you compare lengths.
- T: Partner A, compare the lengths using the sentence frame (point to the frame).
- T: Partner B, confirm that you agree with Partner A's statement. You might say "I agree" or "I disagree." If you disagree, be sure to explain why. Each time we measure new things, switch roles.
- T: Compare the length of your science book with the length of your crayon.
- S: (For one minute, measure, write lengths, and compare them in partnerships.)
- T: Compare the length of your desk and the length of the seat on your chair.
- S: (For one minute, measure, write lengths, and compare them in partnerships.)
- T: (Continue, being mindful to select objects that lead to agreement about which is longer or shorter. One student's pencil may very well be shorter than the crayon, while the other student's might be much longer.)



### NOTES ON MULTIPLE MEANS OF ENGAGEMENT:

Encourage students to speak in complete sentences and to use academic vocabulary by writing or posting a sentence frame for this activity. The frame below exemplifies a single sentence that can be used in two scenarios.

If frames are new to the students, quickly model their use, pointing to the part of the frame used as you speak. Circulate as students use the frame with a partner.

The length of \_\_\_\_ is (more than/less than) the length of \_\_\_\_.

## Skip-Count Up and Down by Fives on the Clock (4 minutes)

Materials: (T) "Clock" made from a 24-inch ribbon marked off at every 2 inches

In this second round, add a new layer of complexity to the work to keep students challenged and engaged. The following is a suggestion for how to adapt the vignette demonstrated in Lesson 1.

- T: Skip-count by 5 until my finger stops. (Slide your finger to 4.)
- S: 5, 10, 15, 20.
- T: (From 4, slide your finger forward to 9.) Keep counting as I move my finger.
- S: 25, 30, 35, 40, 45.
- T: How many minutes have passed in all?
- S: 45 minutes!
- T: (Keep your finger at 9.) How many is 10 minutes less?
- S: 35 minutes!

T: Good. (Put your finger back at 9.) How many is 10 minutes more?

S: 55 minutes!

### Counting with Ones, Tens, and Hundreds: 0 to 1,000 (4 minutes)

Materials: (T) Bundle of 1 hundred, 1 ten, and a single straw from Lesson 1

T: Let's count by ones, tens, and hundreds. I'll hold bundles to show you what to count by. A bundle of 100 means count by hundreds, a bundle of 10 means count by tens, and a single straw means count by ones. (Create visual support by writing the numbers on the board as students count.)

T: Let's start at 0. Ready? (Hold up a bundle of 10 until students count to 130.)

S: 10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 110, 120, 130.

T: (Hold up a bundle of 100 until students count to 630.)

S: 230, 330, 430, 530, 630.

T: (Hold up a bundle of 10 until students count to 690.)

S: 640, 650, 660, 670, 680, 690.

T: (Hold up a single one until students count to 702.)

S: 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702.

T: (Isolate the numbers 698–702 by drawing a box around them.) Partner A, count these numbers up and down as fast as you can to Partner B, then switch. If you both finish before one minute is up, try it again and see if you get faster!

### Application Problem (8 minutes)

Ben and his dad have sold 60 chocolate chip cookies at the school bake sale. If they baked 100 cookies, how many cookies do they still need to sell?

T: Read this problem with me.

T: Close your eyes, and picture what you see when you hear the story.

T: Now, talk with your partner about what you can draw to solve this problem.

S: I can draw circles and put 10 in each. → It's like what we just did with the straws yesterday. → I can draw tens and count on.

T: You have two minutes to draw your picture.

S: (Draw.)



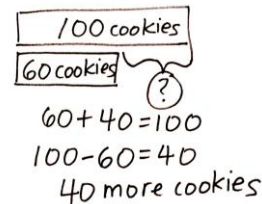
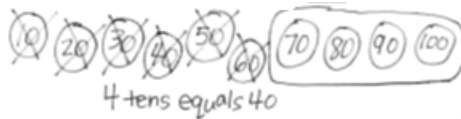
#### NOTES ON PROBLEM SOLVING WITH RDW:

RDW stands for Read, Draw, Write, the problem solving process used throughout *A Story of Units*. Students first read for meaning. In this exemplar vignette, the teacher encourages visualization after the reading by having the students close their eyes. Students should internalize the following set of questions:

- What do I see?
- Can I draw something?
- What can I draw?
- What can I learn from my drawing?

After drawing, students write a statement responding to the question.

- T: Explain to your partner how your drawing helps you answer the question.
- T: Who would like to share his or her thinking?
- S: I drew tens up to 100, then I crossed off 6 tens and there were 4 left. 4 tens equals 40. → I drew 6 tens to show 60, then I counted on to 100 and that was 4 more tens, so 40. → I drew a number bond and broke 100 into 60 and 40. → I wrote  $6 + 4 = 10$ , so  $60 + 40 = 100$ . → I drew a tape diagram. 100 is the whole and 60 is the part. Then, I wrote  $60 + 40 = 100$ , so  $100 - 60 = 40$ .



- T: Those are all very intelligent strategies for solving this problem! If anyone would like to add one of these strategies to his or her paper, please do so now.
- T: So, how many more cookies do Ben and his dad need to sell?
- S: They need to sell 40 more cookies.
- T: Let's write that statement on our paper.

### Concept Development (24 minutes)

Materials: (T) 9 bundles of hundreds, 10 bundles of tens, 10 ones

#### Part 1: Counting from 100 to 110, 100 to 200, and 100 to 1,000

Materials: (T) 10 ones, 10 tens, 10 hundreds

- T: How many straws are in this bundle?
- S: 100.
- T: (Place 1 straw to the students' right of the hundred.) Now, there are one hundred one straws.
- T: (Place 1 more straw to the right.) Now?
- S: 102.
- T: Count for me as I place units of one. (Start the count again at 101. Omit your voice.)
- S: 101, 102, 103, 104, 105, 106, 107, 108, 109, 110.
- T: What unit can I make with these 10 ones?
- S: 1 ten.
- T: (Quickly bundle the 10 ones to make 1 ten.) Skip-count for me as I place the units of ten. (Place tens one at a time as students count.)



#### NOTES ON MULTIPLE MEANS OF ACTION AND EXPRESSION:

By keeping the start number of the count, 100, consistent, students have the opportunity to see the difference the units make in language patterns and quantity.

As the teacher omits his voice in the count, making every effort not to mouth the numbers, the students learn to listen to their peers and to acknowledge that their peers are competent. Students watch the straws, but listen to the count. In doing so, the language is associated with a quantity as well as a sequence of number words. This promotes retention.

If the students' count is weak, have a smaller sub-group count. "Those who feel they know the count, try this time." Then, have the entire group try again. Quickly celebrate authentic improvement.

- S: 110, 120, 130, 140, 150, 160, 170, 180, 190, 200.
- T: What unit can I make with these 10 tens?
- S: 1 hundred.
- T: (Quickly bundle the 10 tens to make 1 hundred.) Skip-count for me as I place units of 100. (Place hundreds down one at a time.)
- S: 100, 200, 300, 400, 500, 600, 700, 800, 900, 1,000.
- T: What unit can I make with these 10 hundreds?
- S: 1 thousand.
- T: (Quickly bundle the 10 hundreds to make 1 thousand.)

**Part 2: Counting from 100 to 124 and 124 to 200**

Materials: (T) 1 hundred, 2 tens, 4 ones (S) 1 hundred, 2 tens, 4 ones per pair

- T: (Place 1 unit of 1 hundred on the carpet but do not give students straws.) With your partner, count from 100 up to 124 using both units of one and ten.
- T: (Circulate and listen. Anticipate most students will count by ones.)
- T: Try again using our units. (Give each pair 1 hundred, 2 tens, and 4 ones.) Model your counting. Which is the fastest way to reach 124?
- T: (Circulate and listen for or guide students to notice how much faster it is to count by tens than by ones up to 124.)
- T: Jeremy, would you stand and show us how you use both tens and ones?
- S: 100, 110, 120, 121, 122, 123, 124.
- T: Alejandra, would you stand and tell us how you used both tens and ones?
- S: 100, 101, 102, 103, 104, 114, 124.
- T: Marco?
- S: 100, 110, 111, 112, 113, 114, 124.
- T: There are other ways, too. Class, please count for me Jeremy's way. (Model with the bundles as students count.)
- S: 100, 110, 120, 121, 122, 123, 124.
- T: Show 124 with your straws. Count down from 124 to 100. Model by taking away one unit at a time.

**Part 3: Counting from 124 to 220 and 220 to 124**

Materials: (S) 9 tens and 6 ones per pair

- T: (Give each pair 9 tens and 6 ones.) With your partner, count from 124 up to 220. Model with your straws as you count.
- T: (Circulate and listen.)

Repeat the process from the previous count. Have the students count up and down both with straws and without.

### Problem Set (10 minutes)

Students should do their personal best to complete the Problem Set within the allotted 10 minutes. For some classes, it may be appropriate to modify the assignment by specifying which problems they work on first. Some problems do not specify a method for solving. Students should solve these problems using the RDW approach used for Application Problems.

T: Draw, label, and box the following numbers.  
(Demonstrate to the least extent possible.)

- 100
- 124
- 85
- 120

T: Use both tens and ones to count up to the target numbers. Draw the tens and ones you used.  
Write the counting numbers.

- 100 to 124
- 124 to 220
- 85 to 120
- 120 to 193

### Student Debrief (10 minutes)

**Lesson Objective:** Count up and down between 100 and 220 using ones and tens.

**Materials:** (S) Straws and bundles of tens and hundreds

The Student Debrief is intended to invite reflection and active processing of the total lesson experience.

Invite students to review their solutions for the Problem Set. They should check work by comparing answers with a partner before going over answers as a class. Look for misconceptions or misunderstandings that can be addressed in the Debrief. Guide students in a conversation to debrief the Problem Set and process the lesson.

MP.7

T: I see that when Freddy counted from 124 to 220, he first used ones to get to 130. Freddy, could you explain your thinking?

NYS COMMON CORE MATHEMATICS CURRICULUM Lesson 2 Problem Set 2•3

Name Jason Date \_\_\_\_\_

1. Draw, label, and box 100. Draw pictures of the units you use to count from 100 to 124.

100 110 120 121 122 123 124

2. Draw, label, and box 124. Draw pictures of the units you use to count from 124 to 220.

124 125 126 127 128 129 130  
140 150 160 170 180 190 200 210 220

COMMON CORE Lesson 2: Count up and down between 100 and 220 using ones and tens. engage<sup>ny</sup> 3.B.10  
Date: 5/11/14  
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NYS COMMON CORE MATHEMATICS CURRICULUM Lesson 2 Problem Set 2•3

3. Draw, label, and box 85. Draw pictures of the units you use to count from 85 to 120.

85 86 87 88 89 90 100 110 120

4. Draw, label, and box 120. Draw pictures of the units you use to count from 120 to 193.

120 130 140 150 160 170 180 190 191 192 193

COMMON CORE Lesson 2: Count up and down between 100 and 220 using ones and tens. engage<sup>ny</sup> 3.B.11  
Date: 5/11/14  
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- S: It's easy for me to skip-count by tens from 130, so I wanted to get to 130.
- T: Freddy got to a benchmark number, 130, and then counted on. Good strategy. Share with your partner why you think I called it a benchmark number.
- S: It's a benchmark number because it's helpful. → It makes it easier to count.
- T: You're exactly right! Benchmark numbers allow us to skip-count, which is faster than counting by ones. A bench is somewhere you sit comfortably, and so a benchmark number is something that is easy to remember and rest on.
- T: Let's practice looking for benchmark numbers. Talk with your partner. What benchmark number would help you count from 85 to 120?

As students talk, circulate, listen, and support. Decide on whom to call to report out to the class.)

- T: Monica, could you please use the straws and bundles to demonstrate?
- S: I used ones to count up to 90 and then counted by tens to 120.
- T: What was the benchmark number Monica got to?
- S: 90.
- T: Let's count as Monica shows us again.
- S: 85, 86, 87, 88, 89, 90.
- T: Stop. Why is 90 a benchmark number? How does 90 help us?
- S: Now we can skip-count by 10, which is faster.
- T: Yes!
- T: Let's try another one. What benchmark number would you use if you were counting from 156 to 200?
- S: 160.
- T: George, could you please show us with the straws as we count?
- S: 156, 157, 158, 159, 160.
- T: Now, what unit will we count by?
- S: Tens!
- T: Let's hear it!
- S: 170, 180, 190, 200!
- T: What benchmark number would you use if you were counting from 97 to 200?
- S: 100.
- T: Sometimes even a benchmark number needs help. If I'm counting from 70 to 200, what benchmark number do I want to get to? Talk to your partner.



### NOTES ON MATHEMATICAL PRACTICE 7:

Giving students opportunities to practice counting using ones and bundles of tens and hundreds while asking them to identify benchmark numbers will cue them to the ease and efficiency of skip-counting.

It will accustom them to look for and make use of the structure provided by the base ten number system, not only to skip-count from multiples of ten but also multiples of 100, and later, larger units.

**MP.7**



MP.7

S: 100!

T: What unit did you use to get to 100?

S: Tens.

T: What unit did you use to count from 100 to 200?

S: Hundreds!

T: What about if I'm counting from 76 to 200? What units would I use? Talk with your partner.

S: Ones, tens, and hundreds!

T: I'll place the straws and bundles as you count. Go!

S: 76, 77, 78, 79, 80, 90, 100, 200.

T: Benchmark numbers are structures that help us count up and down. We can use both different units and benchmark numbers to make counting easier.

### Exit Ticket (3 minutes)

After the Student Debrief, instruct students to complete the Exit Ticket. A review of their work will help you assess the students' understanding of the concepts that were presented in the lesson today and plan more effectively for future lessons. You may read the questions aloud to the students.



Name \_\_\_\_\_ Date \_\_\_\_\_

1. Draw, label, and box 100. Draw pictures of the units you use to count from 100 to 124.

- 
2. Draw, label, and box 124. Draw pictures of the units you use to count from 124 to 220.

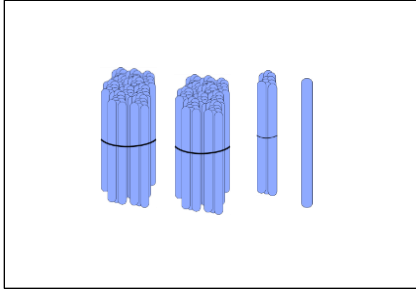
3. Draw, label, and box 85. Draw pictures of the units you use to count from 85 to 120.

- 
4. Draw, label, and box 120. Draw pictures of the units you use to count from 120 to 193.

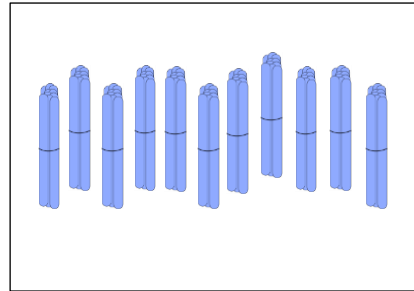
Name \_\_\_\_\_

Date \_\_\_\_\_

1. These are bundles of hundreds, tens, and ones. How many straws are in each group?



\_\_\_\_\_ straws



\_\_\_\_\_ straws

2. Count from 96 to 140 with ones and tens. Use pictures to show your work.


3. Fill in the blanks to reach the benchmark numbers.

35, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, 40, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, 100, \_\_\_\_\_, 300

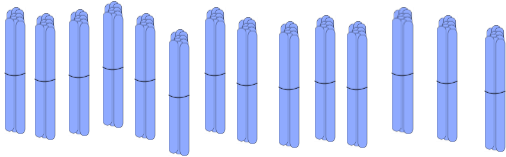
Name \_\_\_\_\_

Date \_\_\_\_\_

1. How many in all?

 \_\_\_\_\_ ones = \_\_\_\_\_ tens \_\_\_\_\_ stars in all.

2. These are bundles with 10 sticks in each.



a. How many tens are there? \_\_\_\_\_

b. How many hundreds? \_\_\_\_\_

c. How many sticks in all? \_\_\_\_\_

3. Sally did some counting. Look at her work. Explain why you think Sally counted this way.

177, 178, 179, 180, 190, 200, 210, 211, 212, 213, 214

4. Show a way to count from 68 to 130 using tens and ones. Explain why you chose to count this way.

5. Draw and solve.

In her classroom, Sally made 17 bundles of 10 straws. How many straws did she bundle in all?