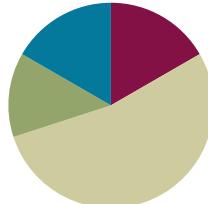


## Lesson 2

**Objective:** Add and subtract multiples of 10 including counting on to subtract.

### Suggested Lesson Structure

|                     |                     |
|---------------------|---------------------|
| Fluency Practice    | (10 minutes)        |
| Concept Development | (32 minutes)        |
| Application Problem | (8 minutes)         |
| Student Debrief     | (10 minutes)        |
| <b>Total Time</b>   | <b>(60 minutes)</b> |



### Fluency Practice (10 minutes)

- Place Value **2.NBT.1, 2.NBT.5** (7 minutes)
- How Many More Tens? **2.NBT.5** (3 minutes)

### Place Value (7 minutes)

Materials: (S) Place value charts, personal white boards

Note: Practicing place value skills will prepare students for adding and subtracting multiples of 10 in the lesson.

- T: (Project place value chart to the tens.) Show 1 ten and 3 ones in number disks. Write the number below it.  
 S: (Students draw 1 tens and 3 ones disks and write 13 below it.)  
 T: Say the number in unit form.  
 S: 1 ten 3 ones.  
 T: Say the number in standard form.  
 S: 13.  
 T: Add 2 tens to your chart. How many tens do you have now?  
 S: 3 tens.  
 T: What is 20 more than 13?  
 S: 33.  
 T: Add 3 tens to 33. How many tens do you have now?  
 S: 6 tens.

#### NOTES ON

#### MULTIPLE MEANS OF ENGAGEMENT:

Before the lesson, have students skip-count by tens to a hundred and back down to zero while doing a physical activity, e.g., jumping jacks.

During the lesson, encourage one or more students to lead the class in an example, e.g., 48 – 30. These may be students who are struggling to grasp the concept and would benefit from personal guidance, or students who grasp the concept quickly and would thrive on leadership opportunities. Praise their use of place value language to explain their thinking.

- T: What is 30 more than 33?  
 S: 63.  
 T: Say the number in unit form.  
 S: 6 tens 3 ones.  
 T: Now subtract 4 tens from 63. What is 40 less than 63?  
 S: 23.

Continue with the following possible sequence:  $23 + 70$ ,  $93 - 40$ ,  $53 + 30$ , and  $83 - 80$ .

### How Many More Tens? (3 minutes)

Materials: (S) Personal white boards

Note: Practicing subtracting multiples of 10 will prepare students for the lesson.

- T: If I say  $34 - 24$ , you say 10. To say it in a sentence you say 34 is 10 more than 24. Ready?  
 T:  $64 - 44$ .  
 S: 20.  
 T: Say it in a sentence.  
 S: 64 is 20 more than 44.

Continue with the following possible sequence:  $85 - 45$ ,  $68 - 38$ ,  $59 - 49$ ,  $47 - 17$ , and  $99 - 19$ .

### Concept Development (32 minutes)

Materials: (T) Rekenrek (S) Personal white boards

Show 34 beads on the Rekenrek.

- T: Yesterday we added and subtracted 1 ten. Today, let's add 2 tens, then 3 tens, and more!  
 T: How many do you see?  
 S: 34!  
 T: The Say Ten way?  
 S: 3 tens 4!  
 T: (Add 2 tens.) How many do you see?  
 S: 5 tens 4!  
 T: I am going to add 2 more tens. Turn and talk, what will happen to the number when I add 2 tens?  
 S: The number in the tens place will get bigger by 2. → The number will get bigger by 20. → It will be 74.  
 T: (Add 2 tens.) What is  $54 + 20$ ?  
 S: 74!  
 T: The Say Ten way?

S: 7 tens 4!

T: If I asked you to add 3 tens to 26, how could you solve that?

S: Count on by ten three times.

→ Change the 2 to 5 because 2 tens plus 3 tens is 5 tens. → Add 3 tens on the Rekenrek.

T: Let's show that on the board using both simplifying strategies, the arrow way and number bonds. I know many of you can just do mental math!

T: I can write adding 3 tens the arrow way, as we did yesterday. (Demonstrate and involve the students as you write.) I can also break apart the tens and ones with a number bond, add the tens and then add the ones. (Demonstrate and involve the students as you write.)

T: No matter which way I write it, when I add tens to a number, the ones stay the same!

The number bond's decomposition is one choice for solving the problem that may not work for some students as a solution strategy but is beneficial for all to understand. Students should be encouraged to make connections between different solution strategies and to choose what works best for a given problem or for their way of thinking.

T: Now it's your turn. On your personal white board, solve  $18 + 20$ . Show your board when you have an answer.

Repeat this process with examples as needed:  $25 + 50$ ,  $38 + 40$ , and  $40 + 27$ .

Show 74 beads on the Rekenrek.

T: Now, let's subtract 2 tens, then 3 tens, and more!

T: How many do you see?

S: 74!

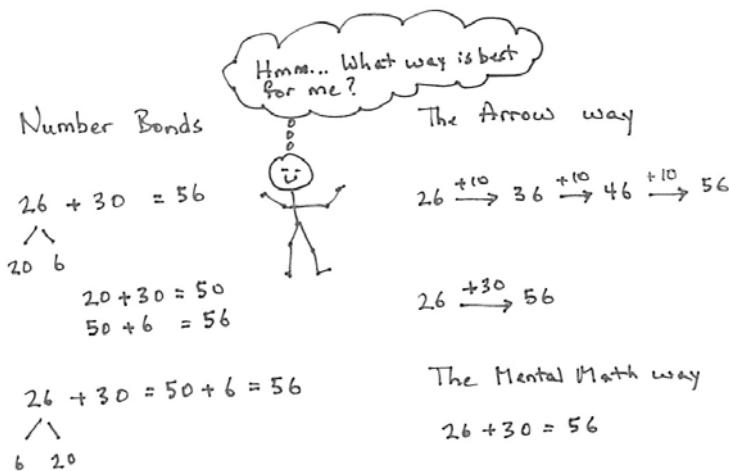
T: The Say Ten way?

S: 7 tens 4!

T: (Subtract 2 tens.) How many do you see?

S: 5 tens 4!

T: I am going to subtract 2 more tens. Turn and talk, what will happen to the number when I subtract 2 tens?



The Mental Math way

$$26 + 30 = 56$$

**MP.3**

#### NOTES ON MULTIPLE MEANS OF REPRESENTATION:

When counting up by tens and on by ones, use a number line to provide visual support. For example, when counting from 30 to 42, have students point to the jump between 30 and 40, then point to 41, 42. The number line correlates very well to the arrow notation.

S: The number in the tens place will get smaller by 2. → The number will get smaller by 20. → It will be 34.

T: (Add 2 tens.) What is  $54 - 20$ ?

S: 34!

T: The Say Ten way?

S: 3 tens 4!

T: Ok, now subtract 3 tens from 56. Take a moment and work on your personal board to solve  $56 - 30$ . (Show the work on the board as students work out this first problem using number bonds and the arrow way.)

T: (Model both the number bonds and arrow methods from their work.) We have an extra simplifying strategy when we are subtracting. We can count up from the part we know.

T: What is the whole?

S: 56.

T: What is the part we know?

S: 30.

T: How could we show the missing part with an addition problem?

S:  $30 + \underline{\quad} = 56$ . →  $\underline{\quad} + 30 = 56$ .

T: We can use the arrow way, counting first by either tens or ones. Try it with a partner.

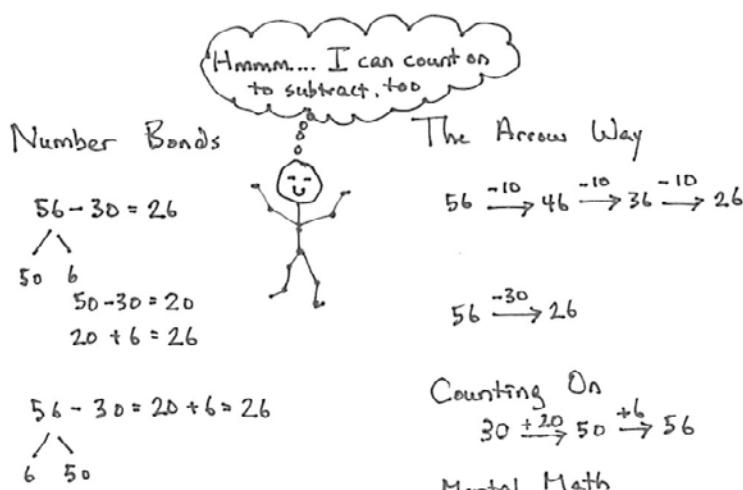
You can either guide students through this or let them work independently. Starting at 30, they might add 2 tens first and then 6 ones, or add 6 ones first and then add 3 tens.

Repeat with  $62 - 40$ ,  $51 - 20$ , and  $77 - 30$ .

### Application Problem (8 minutes)

Susan has 57 cents in her piggy bank. If she just put in 30 cents today, how much did she have yesterday?

Note: This problem gives the students a chance to apply their new learning. It is an *add to with start unknown* problem, a bit of a wolf in sheep's clothing. Many students will say 87 cents. Persist in uncovering the part-whole relationships.



Counting On

$$30 + \frac{20}{\rightarrow} 50 \rightarrow 56$$

Mental Math

$$56 - 30 = 26$$

MP.3

Counting On

$$30 + \frac{20}{\rightarrow} 50 \rightarrow 56$$

Mental Math

$$56 - 30 = 26$$

MP.3

Counting On

$$30 + \frac{20}{\rightarrow} 50 \rightarrow 56$$

Mental Math

$$56 - 30 = 26$$

MP.3

Counting On

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Mental Math

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MP.3

Counting On

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Mental Math

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MP.3

Counting On

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MP.3

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MP.3

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Mental Math

$$56 - 30 = 26$$

MP.3

Counting On

$$30 + \frac{20}{\rightarrow} 50 \rightarrow 56$$

Mental Math

$$56 - 30 = 26</math$$

## 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 solve these problems using the RDW approach used for Application Problems.

## Student Debrief (10 minutes)

**Lesson Objective:** Add and subtract multiples of 10 including counting on to subtract.

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. You may choose to use any combination of the questions below to lead the discussion.

- Which simplifying strategy did you use to solve the sequence in Problem 1(d)? Why is the arrow way a good choice for counting up?
- Explain to your partner how you solved the sequence in Problem 2(c). How did they help you to solve the problems in 2(d)? What was similar about them?
- How was solving Problem 3(e) different from solving the other parts of Problem 3? What did you need to do?
- Explain to your partner how you used the arrow way to solve Problem 4. Why did this strategy work well?
- What connections can you make between the number bond strategy and the arrow way? What is the goal of these simplifying strategies?

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

Encourage students to explain their thinking about adding or subtracting tens. For Problem 2 (c) and (d), facilitate a discussion in which different students share which problem solving method they prefer, and why. Ask students, “How can you tell when one strategy might be better than another?” Students may learn as much from each other’s reasoning as from the lesson.

| NYS COMMON CORE MATHEMATICS CURRICULUM                                                                                                          |                                                        | Lesson 2 Problem Set 2•4   |
|-------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|----------------------------|
| Name <u>Alexa</u>                                                                                                                               | Date _____                                             |                            |
| 1. Solve using place value strategies. Use scratch paper to use the Arrow Way or number bonds, or just use mental math and record your answers. |                                                        |                            |
| a. $5 \text{ tens} + 3 \text{ tens} = \underline{8}$ tens                                                                                       | $2 \text{ tens} + 7 \text{ tens} = \underline{9}$ tens |                            |
| $50 + 30 = \underline{80}$                                                                                                                      | $20 + 70 = \underline{90}$                             |                            |
| b. $24 + 30 = \underline{54}$                                                                                                                   | $50 + 24 = \underline{74}$                             | $14 + 50 = \underline{64}$ |
| c. $20 + 37 = \underline{57}$                                                                                                                   | $37 + 40 = \underline{77}$                             | $60 + 27 = \underline{87}$ |
| d. $57 - \underline{30} = 87$                                                                                                                   | $40 - 34 = 74$                                         | $19 - \underline{50} = 69$ |
| e. $30 - \underline{56} = 86$                                                                                                                   | $38 - \underline{40} = 78$                             | $12 - \underline{40} = 72$ |
| 2. Solve using place value strategies.                                                                                                          |                                                        |                            |
| a. $8 \text{ tens} - 2 \text{ tens} = \underline{6}$ tens                                                                                       | $7 \text{ tens} - 3 \text{ tens} = \underline{4}$ tens |                            |
| $80 - 20 = \underline{60}$                                                                                                                      | $70 - 30 = \underline{40}$                             |                            |
| b. $78 - 40 = \underline{38}$                                                                                                                   | $56 - 30 = \underline{26}$                             | $88 - 50 = \underline{38}$ |
| c. $84 - \underline{40} = 24$                                                                                                                   | $57 - \underline{20} = 37$                             | $93 - \underline{50} = 43$ |
| d. $83 - \underline{60} = 23$                                                                                                                   | $54 - \underline{20} = 34$                             | $91 - \underline{50} = 41$ |
| <small>COMMON CORE</small> Lesson 2: Date _____<br><small>© 2013 Common Core, Inc. All rights reserved. EngageNY</small> <small>4.A.7</small>   |                                                        |                            |

## **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.

| NYS COMMON CORE MATHEMATICS CURRICULUM |                                                                                                                                         | Lesson 24            | 24    |
|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|----------------------|-------|
|                                        |                                                                                                                                         |                      |       |
| 3.                                     | Solve.                                                                                                                                  |                      |       |
| a.                                     | $39 + \underline{30} = 69$                                                                                                              |                      |       |
| b.                                     | 8 tens 7 ones + 3 tens = <u>57</u>                                                                                                      |                      |       |
| c.                                     | <u>20</u> + 5 tens + 7 tens                                                                                                             |                      |       |
| d.                                     | <u>30</u> + 5 tens 6 ones = 8 tens 6 ones                                                                                               |                      |       |
| e.                                     | 48 ones - 2 tens = <u>2</u> tens <u>8</u> ones                                                                                          |                      |       |
| 4.                                     | Mark had 78 puzzle pieces. He lost 30 pieces. How many pieces does Mark have left? Use the Arrow Way to show your simplifying strategy. |                      |       |
|                                        | $\begin{array}{r} 78 \\ \xrightarrow{-10} 68 \\ \xrightarrow{-10} 58 \\ \xrightarrow{-10} \textcircled{48} \end{array}$                 |                      |       |
|                                        |                                                                                                                                         |                      |       |
|                                        |                                                                                                                                         |                      |       |
| COMMON CORE                            | Lesson 24<br>Date _____<br>Add and subtract multiples of ten including rounding as no hundred.                                          | engage <sup>ny</sup> | 4.A.8 |
|                                        |                                                                                                                                         |                      |       |

Name \_\_\_\_\_

Date \_\_\_\_\_

1. Solve using place value strategies. Use scratch paper to use the arrow way or number bonds, or just use mental math and record your answers.

a.  $5 \text{ tens} + 3 \text{ tens} = \underline{\hspace{2cm}} \text{ tens}$        $2 \text{ tens} + 7 \text{ tens} = \underline{\hspace{2cm}} \text{ tens}$

$$50 + 30 = \underline{\hspace{2cm}}$$

$$20 + 70 = \underline{\hspace{2cm}}$$

b.  $24 + 30 = \underline{\hspace{2cm}}$        $50 + 24 = \underline{\hspace{2cm}}$        $14 + 50 = \underline{\hspace{2cm}}$

c.  $20 + 37 = \underline{\hspace{2cm}}$        $37 + 40 = \underline{\hspace{2cm}}$        $60 + 27 = \underline{\hspace{2cm}}$

d.  $57 + \underline{\hspace{2cm}} = 87$        $\underline{\hspace{2cm}} + 34 = 74$        $19 + \underline{\hspace{2cm}} = 69$

e.  $\underline{\hspace{2cm}} + 56 = 86$        $38 + \underline{\hspace{2cm}} = 78$        $12 + \underline{\hspace{2cm}} = 72$

2. Solve using place value strategies.

a.  $8 \text{ tens} - 2 \text{ tens} = \underline{\hspace{2cm}} \text{ tens}$        $7 \text{ tens} - 3 \text{ tens} = \underline{\hspace{2cm}} \text{ tens}$

$$80 - 20 = \underline{\hspace{2cm}}$$

$$70 - 30 = \underline{\hspace{2cm}}$$

b.  $78 - 40 = \underline{\hspace{2cm}}$        $56 - 30 = \underline{\hspace{2cm}}$        $88 - 50 = \underline{\hspace{2cm}}$

c.  $84 - \underline{\hspace{2cm}} = 24$        $57 - \underline{\hspace{2cm}} = 37$        $93 - \underline{\hspace{2cm}} = 43$

d.  $83 - \underline{\hspace{2cm}} = 23$        $54 - \underline{\hspace{2cm}} = 34$        $91 - \underline{\hspace{2cm}} = 41$

3. Solve.

a.  $39 + \underline{\hspace{2cm}} = 69$

b. 8 tens 7 ones - 3 tens =  $\underline{\hspace{2cm}}$

c.  $\underline{\hspace{2cm}} + 5 \text{ tens} = 7 \text{ tens}$

d.  $\underline{\hspace{2cm}} + 5 \text{ tens } 6 \text{ ones} = 8 \text{ tens } 6 \text{ ones}$

e. 48 ones - 2 tens =  $\underline{\hspace{1cm}} \text{ tens } \underline{\hspace{1cm}} \text{ ones}$

4. Mark had 78 puzzle pieces. He lost 30 pieces. How many pieces does Mark have left? Use the arrow way to show your simplifying strategy.

Name \_\_\_\_\_

Date \_\_\_\_\_

Directions: Fill in the missing number to make each statement true.

1.  $50 + 20 = \underline{\hspace{2cm}}$

2.  $4 \text{ tens} + 3 \text{ tens} = \underline{\hspace{2cm}} \text{ tens}$

3.  $7 \text{ tens} - \underline{\hspace{2cm}} \text{ tens} = 5 \text{ tens}$

4.  $\underline{\hspace{2cm}} - 20 = 63$

5.  $6 \text{ tens} + 1 \text{ ten } 4 \text{ ones} = 9 \text{ tens } 4 \text{ ones} - \underline{\hspace{2cm}} \text{ tens}$

Name \_\_\_\_\_

Date \_\_\_\_\_

## 1. Solve using place value strategies.

a.  $2 \text{ tens} + 3 \text{ tens} = \underline{\hspace{2cm}} \text{ tens}$   
 $20 + 30 = \underline{\hspace{2cm}}$

b.  $5 \text{ tens} + 4 \text{ tens} = \underline{\hspace{2cm}} \text{ tens}$   
 $50 + 40 = \underline{\hspace{2cm}}$

$2 \text{ tens } 4 \text{ ones} + 3 \text{ tens} = \underline{\hspace{2cm}} \text{ tens } \underline{\hspace{2cm}} \text{ ones}$   
 $24 + 30 = \underline{\hspace{2cm}}$

$5 \text{ tens } 9 \text{ ones} + 4 \text{ tens} = \underline{\hspace{2cm}} \text{ tens } \underline{\hspace{2cm}} \text{ ones}$   
 $59 + 40 = \underline{\hspace{2cm}}$

c.  $28 + 40 = \underline{\hspace{2cm}}$        $18 + 30 = \underline{\hspace{2cm}}$        $60 + 38 = \underline{\hspace{2cm}}$

d.  $30 + 25 = \underline{\hspace{2cm}}$        $35 + 50 = \underline{\hspace{2cm}}$        $15 + 20 = \underline{\hspace{2cm}}$

e.  $37 + \underline{\hspace{2cm}} = 47$        $\underline{\hspace{2cm}} + 27 = 57$        $17 + \underline{\hspace{2cm}} = 87$

f.  $\underline{\hspace{2cm}} + 22 = 62$        $29 + \underline{\hspace{2cm}} = 79$        $11 + \underline{\hspace{2cm}} = 91$

2. Find each sum. Then use  $>$ ,  $<$ , or  $=$  to compare.

a.  $23 + 40 \underline{\hspace{2cm}} 20 + 33$       d.  $64 + 10 \underline{\hspace{2cm}} 49 + 20$

b.  $50 + 18 \underline{\hspace{2cm}} 48 + 20$       e.  $70 + 21 \underline{\hspace{2cm}} 18 + 80$

c.  $19 + 60 \underline{\hspace{2cm}} 39 + 30$       f.  $35 + 50 \underline{\hspace{2cm}} 26 + 60$

3. Solve using place value strategies.

a.  $6 \text{ tens} - 2 \text{ tens} = \underline{\hspace{2cm}} \text{ tens}$   
 $60 - 20 = \underline{\hspace{2cm}}$

$6 \text{ tens } 3 \text{ ones} - 3 \text{ tens} = \underline{\hspace{2cm}} \text{ tens } \underline{\hspace{2cm}} \text{ ones}$   
 $63 - 30 = \underline{\hspace{2cm}}$

b.  $8 \text{ tens} - 5 \text{ tens} = \underline{\hspace{2cm}} \text{ tens}$   
 $80 - 50 = \underline{\hspace{2cm}}$

$8 \text{ tens } 9 \text{ ones} - 5 \text{ tens} = \underline{\hspace{2cm}} \text{ tens } \underline{\hspace{2cm}} \text{ ones}$   
 $89 - 50 = \underline{\hspace{2cm}}$

c.  $55 - 20 = \underline{\hspace{2cm}}$        $75 - 30 = \underline{\hspace{2cm}}$        $85 - 50 = \underline{\hspace{2cm}}$

d.  $72 - \underline{\hspace{2cm}} = 22$        $49 - \underline{\hspace{2cm}} = 19$        $88 - \underline{\hspace{2cm}} = 28$

e.  $67 - \underline{\hspace{2cm}} = 47$        $71 - \underline{\hspace{2cm}} = 51$        $99 - \underline{\hspace{2cm}} = 69$

4. Complete each math phrase.

20 less than 58 is       .      36 more than 40 is       .

40 less than        is 28.      50 more than        is 64.

5. There were 68 plates in the sink at the end of the day. There were 40 plates in the sink at the beginning of the day. How many plates were added throughout the day? Use the arrow way to show your simplifying strategy.