Topic E

Strategies for Decomposing Tens and Hundreds

2.NBT.7, 2.NBT.9

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

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

Instructional Days: 6

Coherence -Links from: G1–M4 Place Value, Comparison, Addition and Subtraction to 40

-Links to: G3–M2 Place Value and Problem Solving with Units of Measure

G4–M1 Place Value, Rounding, and Algorithms for Addition and Subtraction

Topic E begins with an extension of mental math strategies learned in first grade, when students learned to subtract from the ten by using number bonds. In Lesson 23, they return to this strategy to break apart three-digit minuends and subtract from the hundred. For example, in first grade students solved 14 – 9 by restating the problem as 10 – 9 + 4. In second grade, students use the same strategy to restate 143 – 90 as 100 – 90 + 43.

In Lesson 24, students use number disks on a place value chart to represent subtraction and develop an understanding of decomposition of tens and hundreds. This concrete model helps students see the answer to the question, “Do I have enough ones?” or, “Do I have enough tens?” When they do not, they exchange one of the larger units for ten of the smaller units. Repeated practice with this exchange solidifies their understanding that within a unit of ten there are 10 ones, and within a unit of a hundred there are 10 tens. This practice is connected to the strategies they learned with tens and ones; they learn that the only real difference is in place value. The strategies are also connected to addition through part–whole understanding, which is reinforced throughout.

In Lesson 25, students move towards the abstract when they model decompositions on their place value chart while simultaneously recording the changes in the written form. Students draw a magnifying glass around the minuend, as they did in Topic C. They then ask the question, “Do I have enough ones?” They
refer to the place value disks to answer and exchange a ten disk for 10 ones when necessary. They record the change in the written form. Students repeat these steps when subtracting the tens.

Students use math drawings in Lesson 26 as they move away from concrete representations and into the pictorial stage. They follow the same procedure for decomposing numbers as they did in Lesson 25 with the number disks, but now they may use a chip model or number disk drawing. They continue to record changes in the written form as they work with their models.

Topic E closes with the special case of subtracting from 200. Using number disks on a place value chart, students review the concept that a unit of 100 is comprised of 10 tens. They then model 1 hundred as 9 tens and 10 ones and practice counting to 100 both ways (i.e., 10, 20, 30...100 and 10, 20...90, 91, 92, 93...100). Next, they model the decomposition of a hundred either in two steps (as 10 tens then decomposing 1 ten as 10 ones) or one step (as 9 tens and 10 ones) as they represent subtractions from 200 (see image to the right). Students use this same reasoning to subtract from numbers that have zero tens. For example, to subtract 48 from 106, students model the decomposition of 106 as 10 tens 6 ones and as 9 tens 16 ones. Throughout the lesson, students relate their models to a written form step by step.

A Teaching Sequence Towards Mastery of Strategies for Decomposing Tens and Hundreds

**Objective 1:** Use number bonds to break apart three-digit minuends and subtract from the hundred. (Lesson 23)

**Objective 2:** Use manipulatives to represent subtraction with decompositions of 1 hundred as 10 tens and 1 ten as 10 ones. (Lesson 24)

**Objective 3:** Relate manipulative representations to a written method. (Lesson 25)

**Objective 4:** Use math drawings to represent subtraction with up to two decompositions and relate drawings to a written method. (Lesson 26)

**Objective 5:** Subtract from 200 and from numbers with zeroes in the tens place. (Lessons 27–28)
Lesson 23

Objective: Use number bonds to break apart three-digit minuends and subtract from the hundred.

Suggested Lesson Structure

- Fluency Practice (13 minutes)
- Application Problem (7 minutes)
- Concept Development (30 minutes)
- Student Debrief (10 minutes)
- Total Time (60 minutes)

Fluency Practice (13 minutes)

- Take from the Ten 2.OA.2 (2 minutes)
- Adding to One Hundred 2.NBT.7 (2 minutes)
- Sprint: Subtraction Patterns 2.NBT.5 (9 minutes)

Take from the Ten (2 minutes)

Note: Students practice subtracting from the ten as the foundation for subtracting from the hundred in the lesson.

T: 16 – 9. Take 9 from the ten or the ones?
S: Ten.
T: Say the number sentence.
S: 10 – 9 = 1.
T: Now add back the ones.
S: 1 + 6 = 7.
T: Say the complete number sentence for 16 – 9.
S: 16 – 9 = 7.

Continue with the following possible sequence: 15 – 7, 14 – 8, 13 – 6, 18 – 9, 12 – 7, 16 - 7.

Adding to 1 Hundred (2 minutes)

Note: Students practice adding to 1 hundred in preparation for the lesson.

T: What is the number sentence for 10 more than 100?
Lesson 23

Lesson 23

Use number bonds to break apart three-digit minuends and subtract from the hundred.

Date: 7/4/13

S: 100 + 10 = 110.
T: 25 more than 100.
S: 100 + 25 = 125.
T: 34 more than 100.
S: 100 + 34 = 134.

Continue with the following possible sequence: 42 more, 50 more, 67 more, 69 more, 70 more, 78 more, 88 more.

Sprint: Subtraction Patterns (9 minutes)

Materials: (S) Subtraction Crossing a Ten Sprint

Note: Students are given the opportunity to use mental math strategies when crossing tens to subtract.

Application Problem (7 minutes)

Yossef downloaded 115 songs. 100 of them were rock. The rest were hip-hop.

a. How many of Yossef’s songs were hip-hop?
b. 80 of his rock songs were oldies. How many rock songs were new?

This Application Problem serves to anticipate the day’s Concept Development.

Concept Development (30 minutes)

Materials: (S) Personal white boards with insert

Problem 1: 107 – 90

T: (Write 107 – 90 on the board with number bond arms under 107. Pull out the hundred as shown to the right. Can we break apart 107 by making 100 and some ones? Give me the number sentence.
S: 100 + 7 = 107.
T: Great! Now we can make an easier problem and subtract from the hundred.
T: What is 100 – 90? Turn and talk.
S: 90 plus 10 is 100, so the answer is 10. \( \rightarrow 100 - 90 = 10 \). \( \rightarrow 10 \) tens – 9 tens is 1 ten.
T: Yes, ten! Am I finished? Does 107 – 90 equal 10?
S: No. What about the 7?
T: You’re right, I need to add back the 7 ones! What is 10 + 7?
S: 17.
T: Yes! 107 – 90 = 17.
Problem 2: \(127 – 70\)

T: Let’s try another one together.

T: (Write \(127 – 70\) on the board.) Can you take out the 100?

S: Yes!

T: Show me how to break apart 127 into 100 and some more. (Wait as students complete the number bond.)

T: If you take out the 100, how many are left in 127?

S: 27.

T: Now we can subtract easily! What’s 100 – 70?

S: 30!

T: Great! Now, look at your number bond and add back the rest. Show me your work. (Call on students to share.)

S: I know that 100 – 70 is 30. I added the 27 back on and I got 57. \(20 + 27 = 57\).

Problem 3: \(133 – 60\)

T: Let’s try a harder one. (Write \(133 – 60\) on the board.) What should we do first?

S: Break apart 133. \(\rightarrow\) Take out the 100.

T: Show me.

S: (Decompose 133 on personal white boards.)

T: (Call on students to share their number bonds.)

S: 133 is 100 + 33. \(\rightarrow\) 133 – 33 = 100.

T: What next?

S: Subtract 60 from 100.

T: Yes! Subtract and show me.

S: (Students subtract 100 – 60 and show their work as pictured at right.)

T: How much is 100 – 60?

S: 40.

T: What next?

S: Put the parts together. \(\rightarrow\) Add 40 + 33.

T: Yes! Put the parts together and show me.

S: (Add on their personal white boards and hold up their work.)

T: What is 133 – 60?

S: 73.
Repeat the above process for the following sequence: 128 – 70, 138 – 70, 139 – 60. As you move through the problems, allow students more independence. For the first problem, ask them to set up the problem by decomposing 128 before they show you their boards. For the second problem, ask them to decompose 114 and subtract 60. For the last problem, allow students to complete the whole problem independently as you circulate to offer support. If needed, provide more practice before moving on to the Problem Set.

**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:** Use number bonds to break apart three-digit minuends and subtract from the hundred.

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.

- For Problem 1, how did your drawing match your number bond? How did you show subtracting from the hundred?
- How did the number bond in Problem 1(a) help you to solve 1(b)? What was different about your number bond for 1(b)? How did this affect the answer, in comparison to 1(a)?
- What was the same and different about solving Problem 1(c) and (d)? How did you know that the answer to 1(d) would be one more than 1(c)?
- Explain to your partner how to solve Problem 1(e) in three simple steps. Why does the third step involve addition when this is a subtraction problem?
Lesson 23

NYS COMMON CORE MATHEMATICS CURRICULUM

- How are Parts (g) and (h) of Problem 1 related? Why are their answers the same even though their number bonds are different?
- When is subtracting from the hundred a good mental strategy?

**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.

- Use number bonds to show how you would take 5 tens from 120.

```
100 - 50 = 50
50 + 10 = 60
```

- Use number bonds to show how you would take 2 tens from 120.

```
100 - 20 = 80
80 + 30 = 110
110 + 10 = 120
```

© 2013 Common Core, Inc. Some rights reserved. commoncore.org

This work is licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 3.0 Unported License.
Use number bonds to break apart three-digit minuends and subtract from the hundred.

<table>
<thead>
<tr>
<th>#</th>
<th>Subtract</th>
<th># Correct</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10 - 1 =</td>
<td>23</td>
</tr>
<tr>
<td>2</td>
<td>10 - 2 =</td>
<td>24</td>
</tr>
<tr>
<td>3</td>
<td>20 - 2 =</td>
<td>25</td>
</tr>
<tr>
<td>4</td>
<td>40 - 2 =</td>
<td>26</td>
</tr>
<tr>
<td>5</td>
<td>10 - 2 =</td>
<td>27</td>
</tr>
<tr>
<td>6</td>
<td>11 - 2 =</td>
<td>28</td>
</tr>
<tr>
<td>7</td>
<td>21 - 2 =</td>
<td>29</td>
</tr>
<tr>
<td>8</td>
<td>51 - 2 =</td>
<td>30</td>
</tr>
<tr>
<td>9</td>
<td>10 - 3 =</td>
<td>31</td>
</tr>
<tr>
<td>10</td>
<td>11 - 3 =</td>
<td>32</td>
</tr>
<tr>
<td>11</td>
<td>21 - 3 =</td>
<td>33</td>
</tr>
<tr>
<td>12</td>
<td>61 - 3 =</td>
<td>34</td>
</tr>
<tr>
<td>13</td>
<td>10 - 4 =</td>
<td>35</td>
</tr>
<tr>
<td>14</td>
<td>11 - 4 =</td>
<td>36</td>
</tr>
<tr>
<td>15</td>
<td>21 - 4 =</td>
<td>37</td>
</tr>
<tr>
<td>16</td>
<td>71 - 4 =</td>
<td>38</td>
</tr>
<tr>
<td>17</td>
<td>10 - 5 =</td>
<td>39</td>
</tr>
<tr>
<td>18</td>
<td>11 - 5 =</td>
<td>40</td>
</tr>
<tr>
<td>19</td>
<td>21 - 5 =</td>
<td>41</td>
</tr>
<tr>
<td>20</td>
<td>81 - 5 =</td>
<td>42</td>
</tr>
<tr>
<td>21</td>
<td>10 - 6 =</td>
<td>43</td>
</tr>
<tr>
<td>22</td>
<td>11 - 6 =</td>
<td>44</td>
</tr>
</tbody>
</table>
Use number bonds to break apart three-digit minuends and subtract from the hundred.

<table>
<thead>
<tr>
<th>Subtract</th>
<th>Improvement</th>
<th># Correct</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 - 2 =</td>
<td>23</td>
<td>21 - 6 =</td>
</tr>
<tr>
<td>20 - 2 =</td>
<td>24</td>
<td>41 - 6 =</td>
</tr>
<tr>
<td>30 - 2 =</td>
<td>25</td>
<td>10 - 7 =</td>
</tr>
<tr>
<td>50 - 2 =</td>
<td>26</td>
<td>11 - 7 =</td>
</tr>
<tr>
<td>10 - 2 =</td>
<td>27</td>
<td>51 - 7 =</td>
</tr>
<tr>
<td>11 - 2 =</td>
<td>28</td>
<td>10 - 8 =</td>
</tr>
<tr>
<td>21 - 2 =</td>
<td>29</td>
<td>11 - 8 =</td>
</tr>
<tr>
<td>61 - 2 =</td>
<td>30</td>
<td>61 - 8 =</td>
</tr>
<tr>
<td>10 - 3 =</td>
<td>31</td>
<td>10 - 9 =</td>
</tr>
<tr>
<td>11 - 3 =</td>
<td>32</td>
<td>11 - 9 =</td>
</tr>
<tr>
<td>21 - 3 =</td>
<td>33</td>
<td>31 - 9 =</td>
</tr>
<tr>
<td>71 - 3 =</td>
<td>34</td>
<td>12 - 3 =</td>
</tr>
<tr>
<td>10 - 4 =</td>
<td>35</td>
<td>92 - 3 =</td>
</tr>
<tr>
<td>11 - 4 =</td>
<td>36</td>
<td>13 - 5 =</td>
</tr>
<tr>
<td>21 - 4 =</td>
<td>37</td>
<td>43 - 5 =</td>
</tr>
<tr>
<td>81 - 4 =</td>
<td>38</td>
<td>14 - 6 =</td>
</tr>
<tr>
<td>10 - 5 =</td>
<td>39</td>
<td>64 - 6 =</td>
</tr>
<tr>
<td>11 - 5 =</td>
<td>40</td>
<td>15 - 8 =</td>
</tr>
<tr>
<td>21 - 5 =</td>
<td>41</td>
<td>85 - 8 =</td>
</tr>
<tr>
<td>91 - 5 =</td>
<td>42</td>
<td>16 - 7 =</td>
</tr>
<tr>
<td>10 - 6 =</td>
<td>43</td>
<td>76 - 7 =</td>
</tr>
<tr>
<td>11 - 6 =</td>
<td>44</td>
<td>58 - 9 =</td>
</tr>
</tbody>
</table>
### Lesson 23 Problem Set

Name ________________________________ Date ______________

1. Solve using number bonds to subtract from 100. The first one has been done for you.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td></td>
</tr>
<tr>
<td>106 – 90 = 16</td>
<td></td>
</tr>
<tr>
<td></td>
<td>100 6</td>
</tr>
<tr>
<td>b.</td>
<td></td>
</tr>
<tr>
<td>116 – 90</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>c.</td>
<td></td>
</tr>
<tr>
<td>114 – 80</td>
<td></td>
</tr>
<tr>
<td>d.</td>
<td></td>
</tr>
<tr>
<td>115 – 80</td>
<td></td>
</tr>
<tr>
<td>e.</td>
<td></td>
</tr>
<tr>
<td>123 – 70</td>
<td></td>
</tr>
<tr>
<td>f.</td>
<td></td>
</tr>
<tr>
<td>127 – 60</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>g. 119 - 50</td>
<td>h. 129 - 60</td>
</tr>
<tr>
<td>i. 156 - 80</td>
<td>j. 142 - 70</td>
</tr>
</tbody>
</table>

2. Use a number bond to show how you would take 8 tens from 126.
Name ____________________________  Date ________________

1. Solve using number bonds to subtract from 100.
   
a. 114 - 50

   
b. 176 - 90

   
c. 134 - 40
1. Solve using number bonds to subtract from 100. The first one has been done for you.

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>105 – 90 = 15</td>
<td>b. 121 – 90</td>
</tr>
<tr>
<td></td>
<td>100 5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>100 – 90 = 10</td>
<td></td>
</tr>
<tr>
<td></td>
<td>10 + 5 = 15</td>
<td></td>
</tr>
<tr>
<td>c.</td>
<td>112 – 80</td>
<td>d. 135 – 70</td>
</tr>
<tr>
<td>e.</td>
<td>136 – 60</td>
<td>f. 129 – 50</td>
</tr>
</tbody>
</table>
2. Monica incorrectly solved 132 - 70 to get 102. Show her how to solve it correctly.

Monica's work:
\[ 132 - 70 = \underline{22} \]

Correct way to solve 132 - 70:
\[
\begin{align*}
100 - 70 &= 30 \\
32 &= 102
\end{align*}
\]

3. Billy sold 50 fewer magazines than Alex. Alex sold 128 magazines. How many magazines did Billy sell?
Lesson 24

Objective: Use manipulatives to represent subtraction with decompositions of 1 hundred as 10 tens and 1 ten as 10 ones.

Suggested Lesson Structure

- Fluency Practice (10 minutes)
- Application Problem (6 minutes)
- Concept Development (34 minutes)
- Student Debrief (10 minutes)
- Total Time (60 minutes)

Fluency Practice (10 minutes)

- Subtraction Fact Flash Cards 2.OA.2 (3 minutes)
- Adding to 1 Hundred 2.NBT.5 (3 minutes)
- Take from a Ten or from the Ones 2.NBT.5 (4 minutes)

Subtraction Fact Flash Cards (3 minutes)

Materials: (T) Flash Cards Set 2

Note: By practicing subtraction facts, students will gain fluency subtracting within 20.

Adding to 1 Hundred (3 minutes)

Note: Students practice adding to 1 hundred in preparation for the lesson.

T: What is the number sentence for 15 more than 100?
S: 100 + 15 = 115.
T: 30 more than 100.
S: 100 + 30 = 130.
T: 41 more than 100.
S: 100 + 41 = 141.

Continue with following possible sequence: 45 more, 60 more, 62 more, 68 more, 80 more, 84 more, 89 more.
Lesson 24

NYS COMMON CORE MATHEMATICS CURRICULUM

Lesson 24

Take from a Ten or from the Ones (4 minutes)

Note: This fluency helps students to know when to unbundle a ten to subtract and when not to. This is a foundational skill for the lesson.

T: For every number sentence I say, you tell me if I take from a ten or the ones. When I say 46 – 5, you say take from the ones, but if I say 46 – 7, you say take from a ten. Ready?

T: 46 – 6.
S: Take from the ones.
T: 46 – 9.
S: Take from a ten.

Continue with the following possible sequence: 56 – 5, 52 – 4, 63 – 6, 67 – 5, 65 – 4, 68 – 8, 70 – 3.

Application Problem (6 minutes)

Sammy bought 114 notecards. He used 70 of them. How many notecards did he have left?

Note: This Application Problem provides practice in taking from the hundred, as taught in Lesson 23. To encourage flexible thinking, you might invite some students to count up using the arrow way and invite others to solve by subtracting from the hundred. This serves as a bridge to today’s Concept Development, in which students use number disks to decompose a hundred and a ten to subtract.

Concept Development (34 minutes)

Materials: (T) Number disks (1 hundreds, 18 tens, 18 ones) (S) Number disks (1 hundreds, 18 tens, 18 ones), place value charts, personal white boards

Problem 1: 122 – 80

T: (Write 122 – 80 on the board.) Let’s read the problem together.
T: Yesterday we used number bonds to subtract from the hundred. Today we are going to use our number disks to unbundle the hundred before subtracting. What should I do first?
S: Count out your number disks.
T: What number should I model?
S: 122.
T: Turn and talk. Why do I only need to model 122 and not 80?
Lesson 24

Use manipulatives to represent subtraction with decompositions of 1 hundred as 10 tens and 1 ten as 10 ones.

Date: 7/4/13

S: Because when we subtract, we only show the whole. → 122 is the whole and 80 is a part. We take away the part.

T: (Count to 122 using number disks and arrange them on your place value mat as shown at right.) Can I subtract 0 ones from 2 ones?

S: Yes!

T: We are ready to subtract in the ones place.

T: Let’s move on to the tens. Can I subtract 8 tens from 2 tens?

S: No!

T: I need more tens. What should I do? Turn and talk.

S: A hundred has 10 tens in it. → Decompose 100. → Take 100 apart and break it into 10 tens.

T: That’s right! Just as we can unbundle a ten for 10 ones, we can also unbundle a hundred for 10 tens.

T: Watch what I do with my number disks to unbundle a 100. (Remove a hundreds disk from the place value mat, counting 10 tens, and arrange them in 5-groups in the tens place.)

T: Say the number in tens and ones.

S: 12 tens, 2 ones.

T: Can I subtract 8 tens from 12 tens?

S: Yes!

T: Great! Now we are ready to subtract in both the ones and the tens places.

T: 2 ones minus 0 ones is how many?

S: 2 ones.

T: (Write 2 on the board as shown at right.) 12 tens minus 8 tens is how many? (Remove 8 tens disks from the place value chart.)

S: 4 tens.

T: What is 122 – 80 the Say Ten way?

S: 4 tens 2.

T: The regular way?

S: 42.
Problem 2: $174 - 56$

T: This time, work with me. What I do, you do. (Write $174 - 56$ on the board.) What number should I show on my place value chart now?

S: 174.

T: Show me 174 with your disks. (Give them time to do so.) What number is in the ones place?

S: 4!

T: How many ones do we need to subtract from it?

S: 6!

T: Can we subtract 6 from 4?

S: No!

T: So what do we do?

S: Decompose a ten. → Change a ten for 10 ones.

T: Let’s do it together.

T: (Show taking a tens disk off the chart, counting out 10 ones, and arranging them on the place value chart as shown at right. Students do the same.) How many ones do we have now?

S: 14 ones.

T: Can we subtract 6 ones from 14 ones?

S: Yes!

T: What about the tens place? How many tens do we have left?

S: 6 tens.

T: Do we have enough tens to take 5 tens away?

S: Yes!

T: I think we are ready to subtract.

T: (Remove 6 ones and record the answer. Then, remove 5 tens and record the answer.)

T: I see we have 1 hundred. How many hundreds are we taking away?

S: None.

T: So how many hundreds do we have left?

S: 1 hundred.

T: (Record this on the board.) What is $174 - 56$?

S: 118.

T: How many hundreds in 118?

S: 1 hundred.

T: How many tens are in a hundred?

S: 10 tens.

T: How many is 10 tens plus 1 ten?
Lesson 24

Use manipulatives to represent subtraction with decompositions of 1 hundred as 10 tens and 1 ten as 10 ones.

Date: 7/4/13

© 2013 Common Core, Inc. Some rights reserved. commoncore.org

This work is licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 3.0 Unported License.

S: 11 tens.
T: So how many tens in 118?
S: 11 tens.
T: How many ones in 118?
S: 8 ones.
T: What is 174 – 56 the Say Ten way?
S: 11 ten 8.
T: The regular way?
S: 118!

Problem 3: 136 – 57

T: Let’s try another problem. Again, what I do, you do. (Write 136 – 57 on the board.) What should we do first?
S: Set up the problem with number disks by counting out 1 hundred, 3 tens, and 6 ones.
T: (Allow time to do so.) Can we subtract 7 ones from 6 ones?
S: No!
T: What should we do?
S: Unbundle a ten.
T: Do this with me. (Model taking a tens disk off the chart, counting out 10 ones, and arranging them on the place value chart as shown at right.) How many ones do we have now?
S: 16 ones.
T: Can we subtract 7 ones from 16 ones?
S: Yes!
T: We are ready to subtract in the ones place. Let’s move on to the tens. Can we subtract 5 tens from 2 tens?
S: No!
T: What should we do?
S: Unbundle the hundred. → Take a hundred and rename it 10 tens. → Change 1 hundred for 10 ones.
T: (Remove the hundred from the place value chart, counting out 10 tens, and arranging them in 5-groups on the place value chart. Students do the same.) How many tens do we have?
S: 12 tens.

NOTES ON MULTIPLE MEANS OF ACTION AND EXPRESSION:

Provide straws or similar manipulatives for students to practice literally unbundling if they are unable to grasp the concept with the disks.
Lesson 24

NYS COMMON CORE MATHEMATICS CURRICULUM

Lesson Objective: Use manipulatives to represent subtraction with decompositions of 1 hundred as 10 tens and 1 ten as 10 ones.

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. Tell your partner how you solved the problems in set 1 mentally.

- How did the sequence in Problem 1(a) help you to solve 125 – 26 mentally?
Charlie showed how he solved Problem 2(b), 174 – 58. (Represent problem with number disks.) Since there were not enough ones to subtract, he decomposed a hundred. He explained that since you can remove 5 tens disks, you decompose the hundred. Charlie’s answer was 26. How was Charlie’s reasoning incorrect? What does he need to learn?

For Problem 2(g), did you decompose a hundred or a ten? Why or why not? Could anyone solve this in a different way? What simplifying strategy could you use to solve?

Explain how you know when to unbundle a hundred or a ten. What is the same about changing these larger units for smaller units? What is different?

**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.
Lesson 24 Problem Set

1. Solve using mental math. If you cannot solve mentally, use your place value chart and number disks.
   a. \(25 - 5 = _____\) \(25 - 6 = _____\) \(125 - 25 = _____\) \(125 - 26 = _____\)
   b. \(160 - 50 = _____\) \(160 - 60 = _____\) \(160 - 70 = _____\)

2. Solve using your place value chart and number disks. Unbundle the hundred or ten when necessary. Circle what you did to model each problem.

<table>
<thead>
<tr>
<th></th>
<th>a. 124 - 60 = _____</th>
<th>b. 174 - 58 = _____</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>I unbundled the hundred.</td>
<td>Yes No</td>
</tr>
<tr>
<td></td>
<td>I unbundled a ten.</td>
<td>Yes No</td>
</tr>
<tr>
<td></td>
<td>I unbundled the hundred.</td>
<td>Yes No</td>
</tr>
<tr>
<td></td>
<td>I unbundled a ten.</td>
<td>Yes No</td>
</tr>
<tr>
<td>c.</td>
<td>121 - 48 = _____</td>
<td>d. 125 - 67 = _____</td>
</tr>
<tr>
<td></td>
<td>I unbundled the hundred.</td>
<td>Yes No</td>
</tr>
<tr>
<td></td>
<td>I unbundled a ten.</td>
<td>Yes No</td>
</tr>
<tr>
<td></td>
<td>I unbundled the hundred.</td>
<td>Yes No</td>
</tr>
<tr>
<td></td>
<td>I unbundled a ten.</td>
<td>Yes No</td>
</tr>
<tr>
<td>e.</td>
<td>145 - 76 = _____</td>
<td>f. 181 - 72 = _____</td>
</tr>
<tr>
<td></td>
<td>I unbundled the hundred.</td>
<td>Yes No</td>
</tr>
<tr>
<td></td>
<td>I unbundled a ten.</td>
<td>Yes No</td>
</tr>
<tr>
<td></td>
<td>I unbundled the hundred.</td>
<td>Yes No</td>
</tr>
<tr>
<td></td>
<td>I unbundled a ten.</td>
<td>Yes No</td>
</tr>
</tbody>
</table>
Lesson 24 Problem Set

Lesson 24
Use manipulatives to represent subtraction with decompositions of 1 hundred as 10 tens and 1 ten as 10 ones.

Date: 7/4/13

1. 111 - 99 = ______

   I unbundled the hundred.       Yes  No
   I unbundled a ten.             Yes  No

2. 131 - 42 = ______

   I unbundled the hundred.       Yes  No
   I unbundled a ten.             Yes  No

i. 123 - 65 = ______

   I unbundled the hundred.       Yes  No
   I unbundled a ten.             Yes  No

j. 132 - 56 = ______

   I unbundled the hundred.       Yes  No
   I unbundled a ten.             Yes  No

k. 145 - 37 = ______

   I unbundled the hundred.       Yes  No
   I unbundled a ten.             Yes  No

l. 115 - 48 = ______

   I unbundled the hundred.       Yes  No
   I unbundled a ten.             Yes  No

3. There were 167 apples. The students ate 89 apples. How many apples were left?

4. For early finishers: Tim and John have 175 trading cards together. John has 88 cards.

   a. How many cards does Tim have?

   b. Brady has 29 fewer cards than Tim. Have many cards does Brady have?
Lesson 24 Exit Ticket

Name ___________________________ Date ______________

1. Solve using your place value chart and number disks. Change 1 hundred for 10 tens and change 1 ten for 10 ones when necessary. Circle what you need to do to model each problem.

<table>
<thead>
<tr>
<th></th>
<th>a. 157 - 74 = _______</th>
<th>b. 124 - 46 = _______</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>I unbundled the hundred.</td>
<td>I unbundled the hundred.</td>
</tr>
<tr>
<td></td>
<td>I unbundled a ten.</td>
<td>I unbundled a ten.</td>
</tr>
<tr>
<td></td>
<td>Yes No</td>
<td>Yes No</td>
</tr>
<tr>
<td></td>
<td>Yes No</td>
<td>Yes No</td>
</tr>
</tbody>
</table>
Lesson 24 Homework

Name ________________________________  Date __________________

1. Solve using mental math. If you cannot solve mentally, use your place value chart and number disks.

   a. 38 - 8 = ______  38 - 9 = ______  138 - 38 = ______  138 - 3 =_______

   b. 130 - 20 = ______  130 - 30 = ______  130 - 40 = ______

2. Solve using your place value chart and number disks. Unbundle the hundred or ten when necessary. Circle what you did to model each problem.

   \[
   \begin{array}{|c|}
   \hline
   \text{a.} & 115 - 50 = ______ \\
   \quad \text{I unbundled the hundred.} & \quad \text{Yes} \quad \text{No} \\
   \quad \text{I unbundled a ten.} & \quad \text{Yes} \quad \text{No} \\
   \hline
   \text{b.} & 125 - 57 = ______ \\
   \quad \text{I unbundled the hundred.} & \quad \text{Yes} \quad \text{No} \\
   \quad \text{I unbundled a ten.} & \quad \text{Yes} \quad \text{No} \\
   \hline
   \text{c.} & 88 - 39 = ______ \\
   \quad \text{I unbundled the hundred.} & \quad \text{Yes} \quad \text{No} \\
   \quad \text{I unbundled a ten.} & \quad \text{Yes} \quad \text{No} \\
   \hline
   \text{d.} & 186 - 39 = ______ \\
   \quad \text{I unbundled the hundred.} & \quad \text{Yes} \quad \text{No} \\
   \quad \text{I unbundled a ten.} & \quad \text{Yes} \quad \text{No} \\
   \hline
   \text{e.} & 162 - 85 = ______ \\
   \quad \text{I unbundled the hundred.} & \quad \text{Yes} \quad \text{No} \\
   \quad \text{I unbundled a ten.} & \quad \text{Yes} \quad \text{No} \\
   \hline
   \text{f.} & 172 - 76 = ______ \\
   \quad \text{I unbundled the hundred.} & \quad \text{Yes} \quad \text{No} \\
   \quad \text{I unbundled a ten.} & \quad \text{Yes} \quad \text{No} \\
   \hline
   \end{array}
   \]

Use manipulatives to represent subtraction with decompositions of 1 hundred as 10 tens and 1 ten as 10 ones.

© 2013 Common Core, Inc. Some rights reserved. commoncore.org

This work is licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 3.0 Unported License.
Lesson 24 Homework

NYS COMMON CORE MATHEMATICS CURRICULUM

Lesson 24

Use manipulatives to represent subtraction with decompositions of 1 hundred as 10 tens and 1 ten as 10 ones.

Date: 7/4/13

<table>
<thead>
<tr>
<th>g. 121 - 89 = _______</th>
<th>h. 131 - 98 = _______</th>
</tr>
</thead>
<tbody>
<tr>
<td>I unbundled the hundred. Yes No</td>
<td>I unbundled the hundred. Yes No</td>
</tr>
<tr>
<td>I unbundled a ten. Yes No</td>
<td>I unbundled a ten. Yes No</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>i. 140 - 65 = _______</th>
<th>j. 150 - 56 = _______</th>
</tr>
</thead>
<tbody>
<tr>
<td>I unbundled the hundred. Yes No</td>
<td>I unbundled the hundred. Yes No</td>
</tr>
<tr>
<td>I unbundled a ten. Yes No</td>
<td>I unbundled a ten. Yes No</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>k. 163 - 78 = _________</th>
<th>l. 136 - 87 = _______</th>
</tr>
</thead>
<tbody>
<tr>
<td>I unbundled the hundred. Yes No</td>
<td>I unbundled the hundred. Yes No</td>
</tr>
<tr>
<td>I unbundled a ten. Yes No</td>
<td>I unbundled a ten. Yes No</td>
</tr>
</tbody>
</table>

3. 96 crayons in the basket are broken. The basket has 182 crayons. How many crayons are not broken?
Use manipulatives to represent subtraction with decompositions of 1 hundred as 10 tens and 1 ten as 10 ones.

Date: 7/4/13

9 - 2
11 - 2
13 - 2
15 - 2
17 - 2

10 - 2
12 - 2
14 - 2
16 - 2
18 - 2
<table>
<thead>
<tr>
<th>19 - 2</th>
<th>20 - 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>9 - 3</td>
<td>10 - 3</td>
</tr>
<tr>
<td>11 - 3</td>
<td>12 - 3</td>
</tr>
<tr>
<td>13 - 3</td>
<td>14 - 3</td>
</tr>
<tr>
<td>15 - 3</td>
<td>16 - 3</td>
</tr>
</tbody>
</table>

Use manipulatives to represent subtraction with decompositions of 1 hundred as 10 tens and 1 ten as 10 ones.

Date: 7/4/13
Lesson 24 Flashcard Template

Use manipulatives to represent subtraction with decompositions of 1 hundred as 10 tens and 1 ten as 10 ones.

Date: 7/4/13

17 - 3
18 - 3
19 - 3
20 - 3
9 - 4
10 - 4
11 - 4
12 - 4
13 - 4
14 - 4

© 2013 Common Core, Inc. Some rights reserved. commoncore.org

This work is licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 3.0 Unported License.
Use manipulatives to represent subtraction with decompositions of 1 hundred as 10 tens and 1 ten as 10 ones.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>4</td>
</tr>
<tr>
<td>16</td>
<td>4</td>
</tr>
<tr>
<td>17</td>
<td>4</td>
</tr>
<tr>
<td>18</td>
<td>4</td>
</tr>
<tr>
<td>19</td>
<td>4</td>
</tr>
<tr>
<td>20</td>
<td>4</td>
</tr>
<tr>
<td>9</td>
<td>5</td>
</tr>
<tr>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>11</td>
<td>5</td>
</tr>
<tr>
<td>12</td>
<td>5</td>
</tr>
</tbody>
</table>
Lesson 24 Flashcard Template

Lesson 24

Use manipulatives to represent subtraction with decompositions of 1 hundred as 10 tens and 1 ten as 10 ones.

Date: 7/4/13

<table>
<thead>
<tr>
<th>13 - 5</th>
<th>14 - 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>15 - 5</td>
<td>16 - 5</td>
</tr>
<tr>
<td>17 - 5</td>
<td>18 - 5</td>
</tr>
<tr>
<td>19 - 5</td>
<td>20 - 5</td>
</tr>
<tr>
<td>9 - 6</td>
<td>10 - 6</td>
</tr>
<tr>
<td>11 - 6</td>
<td>12 - 6</td>
</tr>
<tr>
<td>--------</td>
<td>--------</td>
</tr>
<tr>
<td>13 - 6</td>
<td>14 - 6</td>
</tr>
<tr>
<td>15 - 6</td>
<td>16 - 6</td>
</tr>
<tr>
<td>17 - 6</td>
<td>18 - 6</td>
</tr>
<tr>
<td>19 - 6</td>
<td>20 - 6</td>
</tr>
</tbody>
</table>

Use manipulatives to represent subtraction with decompositions of 1 hundred as 10 tens and 1 ten as 10 ones.

Date: 7/4/13
<table>
<thead>
<tr>
<th>9 - 7</th>
<th>10 - 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>11 - 7</td>
<td>12 - 7</td>
</tr>
<tr>
<td>13 - 7</td>
<td>14 - 7</td>
</tr>
<tr>
<td>15 - 7</td>
<td>16 - 7</td>
</tr>
<tr>
<td>17 - 7</td>
<td>18 - 7</td>
</tr>
</tbody>
</table>

Lesson 24

Use manipulatives to represent subtraction with decompositions of 1 hundred as 10 tens and 1 ten as 10 ones.

Date: 7/4/13
<table>
<thead>
<tr>
<th>19 - 7</th>
<th>20 - 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>9 - 8</td>
<td>10 - 8</td>
</tr>
<tr>
<td>11 - 8</td>
<td>12 - 8</td>
</tr>
<tr>
<td>13 - 8</td>
<td>14 - 8</td>
</tr>
<tr>
<td>15 - 8</td>
<td>16 - 8</td>
</tr>
</tbody>
</table>

Use manipulatives to represent subtraction with decompositions of 1 hundred as 10 tens and 1 ten as 10 ones.

Date: 7/4/13
Use manipulatives to represent subtraction with decompositions of 1 hundred as 10 tens and 1 ten as 10 ones.

<table>
<thead>
<tr>
<th>17 - 8</th>
<th>18 - 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>19 - 8</td>
<td>20 - 8</td>
</tr>
<tr>
<td>9 - 9</td>
<td>10 - 9</td>
</tr>
<tr>
<td>11 - 9</td>
<td>12 - 9</td>
</tr>
<tr>
<td>13 - 9</td>
<td>14 - 9</td>
</tr>
</tbody>
</table>
Lesson 24 Flashcard Template

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>15 - 9</td>
<td>16 - 9</td>
</tr>
<tr>
<td>17 - 9</td>
<td>18 - 9</td>
</tr>
<tr>
<td>19 - 9</td>
<td>20 - 9</td>
</tr>
</tbody>
</table>

Use manipulatives to represent subtraction with decompositions of 1 hundred as 10 tens and 1 ten as 10 ones.

Date: 7/4/13

© 2013 Common Core, Inc. Some rights reserved. commoncore.org

This work is licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 3.0 Unported License.
Lesson 25

Objective: Relate manipulative representations to a written method.

Suggested Lesson Structure

- **Fluency Practice** (11 minutes)
- **Application Problem** (6 minutes)
- **Concept Development** (33 minutes)
- **Student Debrief** (10 minutes)

**Total Time** (60 minutes)

### Fluency Practice (11 minutes)

- Subtraction Fact Flash Cards 2.OA.2 (3 minutes)
- Zap to Zero 2.NBT.5 (3 minutes)
- Rename the Units: Choral Response 2.NBT.1 (5 minutes)

### Subtraction Fact Flash Cards (3 minutes)

**Materials:** (T) Flash Cards Set 2

**Note:** By practicing subtraction facts, students will gain fluency subtracting within 20.

### Zap to Zero (3 minutes)

**Note:** Practicing using place value concepts to mentally subtract will help lay a foundation for this lesson’s content.

- **T:** (Write 184.) If I say zap the digit 8 to zero, you say subtract 80. Ready?
- **T:** Zap the digit 8 to zero.
- **S:** Subtract 80.
- **T:** What is the number sentence?
- **S:** 184 – 80 = 104.
- **T:** Start again with 184. Zap the digit 1 to zero.
- **S:** Subtract 100.
- **T:** What is the number sentence?
- **S:** 184 – 100 = 84
Lesson 25

Relate manipulative representations to a written method.

**NOTE ON MULTIPLE MEANS OF ENGAGEMENT:**
Some students may need scaffolding with three-digit minuend problems that only require one unbundling step in the tens. Once they have demonstrated proficiency with these problems, introduce unbundling only the hundreds. Finally, introduce problems with unbundling in both the ones and the tens.

Repeat using the following possible sequence: 173, 256.

**Rename the Units: Choral Response (5 minutes)**

Note: This fluency will review foundations that lead into today’s lesson.

**T:** (Write 30 ones = _____ tens.) Say the number sentence.
**S:** 30 ones = 3 tens.
**T:** (Write 20 ones = 1 ten _____ ones.) Say the number sentence.
**S:** 20 ones = 1 ten 10 ones.
**T:** (Write 24 ones = 1 ten _____ ones.) Say the number sentence.
**S:** 24 ones = 1 ten 14 ones.

Repeat the process for 27, 30, 32, 38, 40, 41, 46, 50, 63, 88.

**Application Problem (6 minutes)**

114 people went to the fair. 89 of them went in the evening. How many went during the day?

Note: Allow students to choose the strategy to solve the Application Problem. Students may decompose 100, use the arrow way, or use number disks.

**Concept Development (33 minutes)**

Materials: (T) Number disks  (S) Personal white boards, number disks

Note: It may be better to have one student use the disks and one student use the written method, and then switch.

**Problem 1: 175 – 56**

**T:** Today, let’s use our number disks to help us solve larger numbers using a vertical written method. (Write 175 – 56 in vertical form on the board.) What should I do first?

**S:** Get ready to subtract!

**T:** (Draw the magnifying glass as shown on the next page.) What next?

**S:** Count out your number disks.

**T:** (Model counting 1 hundred, 7 tens, and 5 ones and placing them on your place value mat.) Why do we only show 1 hundred, 7 tens, and 5 ones? Turn and talk.
S: Because when you subtract, you only show the whole. → We will subtract from 175. → We are subtracting one part, and the amount that is left is the other part.

T: Ok, what next?

S: Look at the ones column. → See if you have enough ones to subtract.

T: Can we subtract 8 ones from 5 ones?

S: No!

T: Turn and talk. What can we do to find some more ones?

S: We have to unbundle a ten. → We have to change a ten for 10 ones.

T: Why don’t we get more ones from the hundred? Turn and talk.

S: Because 100 would give us 10 tens, not 10 ones. → A hundred changes into 100 ones. That's too many. → We always go one place to the left, not two places.

T: (Remove a tens disk from the place value chart, counting out 10 ones and arranging them in 5-groups as shown at right.) How do we represent our model in the written subtraction?

S: Cross out the 7 and make it a 6. Change the 5 to 15. → Change the 7 tens to 6 tens and the 5 ones to 15 ones.

T: (Change the tens to 6 tens and change the ones to 15 ones.) Now, can we subtract 5 tens from 6 tens?

S: Yes!

T: Are we ready to subtract using the vertical written method?

S: Yes!

T: How many is 15 ones minus 6 ones?

S: 9 ones.

T: (Remove 6 ones disks from the place value chart, and record the work in the vertical written method.) Whatever we do to our number disks, we must also do to the written subtraction. What next?

S: Subtract the tens.

T: How many is 6 tens minus 5 tens?

S: 1 ten.

T: (Remove 1 tens disk on the place value chart, and record the work in the vertical form.) 75 – 56 is how many?

S: 19.

T: The Say Ten way?

S: 1 ten 9.
Problem 2: 115 – 56

T: This time, solve with me. What I do, you do. (Write 115 – 56 on the board.) Count out your number disks with me.

S: 1 hundred, 1 ten, 1 one, 5 ones.

T: ( Arrange the number disks on the place value chart and instruct students to do the same.) What should we always do first?

S: Get ready to subtract!

T: Turn and talk. How should we set up the problem for subtraction?

S: You can’t take 6 ones from 5 ones, so you have to unbundle a ten. → Check to make sure we can subtract in each place. → Change the whole to 10 tens, 15 ones. → Ask yourself if you have enough ones and tens to subtract.

T: Can we subtract in the ones place?

S: No! We need to unbundle a ten.

T: Show me on your place value charts. ( Remove a tens disk from the place value chart, and add 10 ones disks as students do the same.) What we do with the disks we must also do in the written form. Show me on the written subtraction. (Cross out the 1, and write a 0 above it. Cross out the 5, and write a 15 above it. Students do the same.)

T: Can we subtract 5 tens from 0 tens?

S: No way! We must unbundle a hundred. → We have to change 1 hundred for 10 tens.

T: Show me on your place value charts and on the written subtraction. ( Remove a hundreds disk from the place value chart and add 10 tens. Record the change in the vertical form. Students do the same.)

T: Are we ready to subtract?

S: Yes!

T: What is 15 ones minus 6 ones?

S: 9 ones.

T: (Record the answer in the written subtraction as students do the same.) What is 10 tens minus 5 tens?

S: 5 tens.

T: (Record the answer in the written form as students do the same.) What is 0 hundreds minus 0?

S: 0!

T: Read the problem and answer using the Say Ten way.
Lesson 25

Lesson 25:

Relate manipulative representations to a written method.

Date: 7/4/13

© 2013 Common Core, Inc. Some rights reserved. commoncore.org

This work is licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 3.0 Unported License.

S: 10 tens 15 ones minus 5 tens 6 ones equals 5 tens 9 ones.

T: Now the regular way.

S: 115 minus 56 equals 59.

Repeat the above process with the following sequence: 107 – 36, 100 – 66, 122 – 89. Guide the students towards proficiency by encouraging them to work more independently on each problem. As students show proficiency, allow them to move on to the Problem Set.

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: Relate manipulative representations to a written method.

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.

- In Problem 1, which problems could you have solved mentally?
- How did you solve Problem 1(c), 145 – 54? How did you show this on your place value chart? How did you show this with your numbers?
- Explain to your partner how you used number disks to solve Problem 1(c), 167 – 78. How did your place value chart match the vertical written method?

Problem 1:

1. Solve the following problems using the vertical written method, your place value chart and number disks. Unbundle a ten or hundred when necessary. Show your work for each problem.

   a. 72 - 49
      - 49
      - 23

   b. 118 - 30
      - 30
      - 88

   c. 145 - 54
      - 54
      - 91

Problem 2:

Alex: Tech baked 110 cookies for the bake sale. She sold 78 of them. How many cookies did she have left?

Problem 3:

Tommy had $15.4. She bought a watch for $8. Does she have enough money left over to buy a $6.7 bracelet?
For Problem 1(d), 102 – 64 and 107 – 78, what did you notice about your place value chart when you set these up? What did this tell you immediately?

In Problem 2, what part did Mrs. Tosh have left? Did anyone write an equation to find the missing addend (or part) and solve by using a simplifying strategy? How does subtraction connect to our understanding that two parts make a whole?

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.
Lesson 25 Problem Set

1. Solve the following problems using the vertical written method, your place value chart, and number disks. Unbundle a ten or hundred when necessary. Show your work for each problem.

   a. 72 - 49  
      83 - 49

   b. 118 - 30  
      118 - 85

   c. 145 - 54  
      167 - 78

   d. 102 - 64  
      107 - 78
2. Mrs. Tosh baked 160 cookies for the bake sale. She sold 78 of them. How many cookies did she have left?

3. Tammy had $154. She bought a watch for $86. Does she have enough money left over to buy a $67 bracelet?
Lesson 25 Exit Ticket

Name ________________________________ Date ________________

1. Solve the following problems using the vertical written method, your place value chart, and number disks. Unbundle a ten or hundred when necessary. Show your work for each problem.

   a. 97 - 69

   b. 121 - 65
Name ___________________________________________  Date ______________

1. Solve the following problems using the vertical written method, your place value chart, and number disks. Unbundle a ten or hundred when necessary. Show your work for each problem.

   a. 65 – 38  
   b. 111 – 60  
   c. 163 – 66  
   d. 102 – 86

   66 – 49  
   120 – 67  
   184 – 95  
   108 – 39
2. Dominic has $167. He has $88 more than Mario. How much money does Mario have?

3. Which problem will have the same answer as 133 - 77? Show your work.
   a. 155 - 66
   b. 144 - 88
   c. 177 - 33
   d. 139 - 97
Lesson 26

Objective: Use math drawings to represent subtraction with up to two decompositions and relate drawings to a written method.

Suggested Lesson Structure

- Fluency Practice: 13 minutes
- Application Problem: 6 minutes
- Concept Development: 31 minutes
- Student Debrief: 10 minutes
- Total Time: 60 minutes

Fluency Practice (13 minutes)

- Subtraction Fact Flash Cards 2.OA.2: 2 minutes
- Subtraction from Tens 2.NBT.5: 3 minutes
- Sprint: Subtraction Patterns 2.NBT.5: 8 minutes

Subtraction Fact Flash Cards (2 minutes)

Materials: (T) Flash Cards Set 2

Note: By practicing subtraction facts, students will gain fluency subtracting within 20.

Subtraction from Tens (3 minutes)

Note: This allows students to see how their take-from-ten facts help them to solve many, many problems. It also prepares them for today’s Sprint.

T: I say a basic fact, you add ten to the whole and continue until I say to stop. So after 10 − 5 = 5, you would solve 20 − 5, and then...?
S: 30 − 5 = 25, 40 − 5 = 35, 50 − 5 = 45.
T: Yes, as high as you can before I give the signal to stop. Let’s begin. 10 − 5.

Students work. Stop everyone when you see the slowest student has completed at least two problems.

Continue with the following possible sequence: 10 − 8, 11 − 2.
Lesson 26

Sprint: Subtraction Patterns (8 minutes)

Materials: (S) Subtraction Crossing a Ten Sprint

Note: Students are given the opportunity to use mental math strategies when crossing tens to subtract.

Application Problem (6 minutes)

Chloe needs 153 beads to make a bag. She only has 49. How many more beads does she need?

This Application Problem serves as practice of Lesson 25 Concept Development.

Concept Development (31 minutes)

Materials: (S) Personal white boards

Problem 1: 172 – 56

T: (Write 172 – 56 in the vertical written form on the board.) Turn and talk. Use place value language to tell your partner how you could show this problem with a chip model.

S: Draw 1 dot in the hundreds, 7 dots in the tens, and 2 dots in the ones. \( \rightarrow \) I know that you only show the whole, so I would show 1 hundred, 7 tens, and 2 ones by drawing dots in the correct columns on my chart.

T: (Create a chip model to solve 172 – 56. Remind students that when subtracting, we only draw the whole.) Let’s record our work in writing as we solve. When we are subtracting, what should we always do first?

S: Set up the problem for subtraction. \( \rightarrow \) Make sure we have enough ones and tens to solve. \( \rightarrow \) Get ready to subtract.

T: Yes. Let’s draw our magnifying glass to help us do that.

T: Can we subtract 6 ones from 2 ones?

S: No! We need to unbundle a ten.

T: Could I get the ones I need from the hundred?

S: No, just tens. \( \rightarrow \) Yes, you can. Hey, can we unbundle the hundred instead? \( \rightarrow \) Do you want a hundred dots? That’s not easy. Let’s just change 1 ten for 10 ones.
Lesson 26

Use math drawings to represent subtraction with up to two decompositions and relate drawings to a written method.

T: Yes, changing 10 ones for 1 ten is a lot simpler, though I like that you realize there are ones inside the hundred, too.

T: (Cross out a dot in the tens place, adding 10 dots to the ones place. Record the change in the written subtraction.)

T: Can we subtract 5 tens from 6 tens?
S: Yes!

T: Are we ready to subtract?
S: Yes!

T: What is 12 ones minus 6 ones? (Cross out 6 dots in the ones column on the chip model.)
S: 6 ones.

T: (Record the ones in the written subtraction.) What is 6 tens minus 5 tens? (Cross out 5 dots in the tens place on the chip model.)
S: 1 ten.

T: (Record the tens in the written subtraction.) What is 1 hundred minus 0 hundreds?
S: 1 hundred.

T: Read the answer the Say Ten way.
S: 1 hundred 1 ten 6.

T: The regular way?
S: 1 hundred sixteen.

Problem 2: 137 – 45

T: This time, you do what I do. (Write 137 – 45 on the board in the vertical form as students do the same on their personal white boards. Ask students to leave space on the left for a place value chart. Draw a chip model to represent 137 – 45 as students do the same.) What should we do first with our written numbers?
S: Set up the problem for subtraction. Make sure we have enough ones and tens to subtract.

T: Can we subtract 5 ones from 7 ones?
S: Yes!

T: Are we ready to subtract in the ones?
S: Yes!

T: Can we subtract 4 tens from 3 tens?
S: No! Unbundle the hundred.

T: (Cross out the dot in the hundreds place, adding 10 dots to the tens place. Record the change in the algorithm. Instruct students to do the same.) Are we ready to subtract in the tens?
S: Yes!
T: Let’s begin. What is 7 ones minus 5 ones? (Cross out 5 dots in the ones place on the chip model as students do the same.)
S: 2 ones.
T: Let’s record that in the algorithm. (Write 2 in the ones place as students do the same.) What is 13 tens minus 4 tens? (Cross out 3 dots in the tens place on the chip model as students do the same.)
S: 9 tens.
T: Let’s record that in the written subtraction. (Write 9 in the tens place as students do the same.) What is 137 – 45?
S: 92.
T: The Say Ten way?
S: 9 ten 2.

Repeat the above process with 112 – 75. If students show proficiency, allow them to move on to the Problem Set. Those who need more support might be guided through the following sequence: 127 – 19, 116 – 36, 123 – 86.

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: Use math drawings to represent subtraction with up to two decompositions and relate drawings to a written method.
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.

- Explain to your partner how you solved 1(a) and (b). Compare the unbundling you had to do for each of these problems. How was it different and how was it the same?
- For Problem 1(c), use place value language to explain to your partner how your chip model matches the algorithm. Could you have used a mental strategy to solve, too?
- For Problem 1(e), what did you do when you needed more ones, but there weren’t any tens to unbundle? How did you decompose the hundred into tens and ones? Could you have used a mental strategy to solve, too?
- For Problem 2, explain to your partner whose drawing was incorrect and why. Use place value language to defend your reasoning.

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.
Lesson 26 Sprint

A

<table>
<thead>
<tr>
<th>Subtract</th>
<th># Correct</th>
</tr>
</thead>
<tbody>
<tr>
<td>1   30 - 1 =</td>
<td>23</td>
</tr>
<tr>
<td>2   40 - 2 =</td>
<td>24</td>
</tr>
<tr>
<td>3   50 - 3 =</td>
<td>25</td>
</tr>
<tr>
<td>4   50 - 4 =</td>
<td>26</td>
</tr>
<tr>
<td>5   50 - 5 =</td>
<td>27</td>
</tr>
<tr>
<td>6   50 - 9 =</td>
<td>28</td>
</tr>
<tr>
<td>7   51 - 9 =</td>
<td>29</td>
</tr>
<tr>
<td>8   61 - 9 =</td>
<td>30</td>
</tr>
<tr>
<td>9   81 - 9 =</td>
<td>31</td>
</tr>
<tr>
<td>10  82 - 9 =</td>
<td>32</td>
</tr>
<tr>
<td>11  92 - 9 =</td>
<td>33</td>
</tr>
<tr>
<td>12  93 - 9 =</td>
<td>34</td>
</tr>
<tr>
<td>13  93 - 8 =</td>
<td>35</td>
</tr>
<tr>
<td>14  83 - 8 =</td>
<td>36</td>
</tr>
<tr>
<td>15  33 - 8 =</td>
<td>37</td>
</tr>
<tr>
<td>16  33 - 7 =</td>
<td>38</td>
</tr>
<tr>
<td>17  43 - 7 =</td>
<td>39</td>
</tr>
<tr>
<td>18  53 - 6 =</td>
<td>40</td>
</tr>
<tr>
<td>19  63 - 6 =</td>
<td>41</td>
</tr>
<tr>
<td>20  63 - 5 =</td>
<td>42</td>
</tr>
<tr>
<td>21  73 - 5 =</td>
<td>43</td>
</tr>
<tr>
<td>22  93 - 5 =</td>
<td>44</td>
</tr>
</tbody>
</table>

© Bill Davidson
<table>
<thead>
<tr>
<th>Subtract</th>
<th>Improvement</th>
<th># Correct</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 20 - 1 =</td>
<td>23 21 - 2 =</td>
<td></td>
</tr>
<tr>
<td>2 30 - 2 =</td>
<td>24 21 - 3 =</td>
<td></td>
</tr>
<tr>
<td>3 40 - 3 =</td>
<td>25 21 - 4 =</td>
<td></td>
</tr>
<tr>
<td>4 40 - 4 =</td>
<td>26 31 - 4 =</td>
<td></td>
</tr>
<tr>
<td>5 40 - 5 =</td>
<td>27 41 - 5 =</td>
<td></td>
</tr>
<tr>
<td>6 40 - 9 =</td>
<td>28 51 - 6 =</td>
<td></td>
</tr>
<tr>
<td>7 41 - 9 =</td>
<td>29 61 - 7 =</td>
<td></td>
</tr>
<tr>
<td>8 51 - 9 =</td>
<td>30 71 - 8 =</td>
<td></td>
</tr>
<tr>
<td>9 71 - 9 =</td>
<td>31 72 - 8 =</td>
<td></td>
</tr>
<tr>
<td>10 72 - 9 =</td>
<td>32 72 - 7 =</td>
<td></td>
</tr>
<tr>
<td>11 82 - 9 =</td>
<td>33 72 - 6 =</td>
<td></td>
</tr>
<tr>
<td>12 83 - 9 =</td>
<td>34 72 - 3 =</td>
<td></td>
</tr>
<tr>
<td>13 83 - 8 =</td>
<td>35 72 - 5 =</td>
<td></td>
</tr>
<tr>
<td>14 93 - 8 =</td>
<td>36 35 - 6 =</td>
<td></td>
</tr>
<tr>
<td>15 23 - 8 =</td>
<td>37 46 - 7 =</td>
<td></td>
</tr>
<tr>
<td>16 23 - 7 =</td>
<td>38 57 - 8 =</td>
<td></td>
</tr>
<tr>
<td>17 33 - 7 =</td>
<td>39 68 - 9 =</td>
<td></td>
</tr>
<tr>
<td>18 43 - 6 =</td>
<td>40 67 - 9 =</td>
<td></td>
</tr>
<tr>
<td>19 53 - 6 =</td>
<td>41 54 - 6 =</td>
<td></td>
</tr>
<tr>
<td>20 53 - 5 =</td>
<td>42 24 - 9 =</td>
<td></td>
</tr>
<tr>
<td>21 63 - 5 =</td>
<td>43 35 - 9 =</td>
<td></td>
</tr>
<tr>
<td>22 83 - 5 =</td>
<td>44 46 - 9 =</td>
<td></td>
</tr>
</tbody>
</table>

© Bill Davidson
Lesson 26 Problem Set

Name ___________________________ Date ________________

1. Solve vertically. Draw chips on the place value chart. Unbundle when needed.

<table>
<thead>
<tr>
<th>hundreds</th>
<th>tens</th>
<th>ones</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. \(181 - 63 = \) __________

<table>
<thead>
<tr>
<th>hundreds</th>
<th>tens</th>
<th>ones</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

b. \(134 - 52 = \) __________

<table>
<thead>
<tr>
<th>hundreds</th>
<th>tens</th>
<th>ones</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

c. \(175 - 79 = \) __________

<table>
<thead>
<tr>
<th>hundreds</th>
<th>tens</th>
<th>ones</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Lesson 26 Problem Set

**Lesson 26: Use math drawings to represent subtraction with up to two decompositions and relate drawings to a written method.**

Date: 7/4/13

### d. 115 - 26 = _________

<table>
<thead>
<tr>
<th>hundreds</th>
<th>tens</th>
<th>one</th>
</tr>
</thead>
</table>

### e. 100 - 64 = _________

<table>
<thead>
<tr>
<th>hundreds</th>
<th>tens</th>
<th>ones</th>
</tr>
</thead>
</table>

2. Tanisha and James drew models on their place value charts to solve this problem: 102 - 47. Tell whose model is incorrect and why.

James

<table>
<thead>
<tr>
<th>Hundreds</th>
<th>Tens</th>
<th>Ones</th>
</tr>
</thead>
</table>

Tanisha

<table>
<thead>
<tr>
<th>Hundreds</th>
<th>Tens</th>
<th>Ones</th>
</tr>
</thead>
</table>

______________’s model is incorrect because ____________________________

_________________________________________________________________________.
1. Solve vertically. Draw chips on the place value chart. Unbundle when needed.

   a. \(153 - 46 = \) 

   

   

   

   

   b. \(107 - 68 = \) 

   

   

   

   

Name ________________________________ Date __________________

Lesson 26: Use math drawings to represent subtraction with up to two decompositions and relate drawings to a written method.

July 4, 2013

Copyright © 2013 Common Core, Inc. Some rights reserved. commoncore.org

This work is licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 3.0 Unported License.
Name ____________________________  Date ______________

1. Solve vertically. Draw chips on the place value chart. Unbundle when needed.

<table>
<thead>
<tr>
<th>hundreds</th>
<th>tens</th>
<th>ones</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. $114 - 65 = \underline{\phantom{100}}$

<table>
<thead>
<tr>
<th>hundreds</th>
<th>tens</th>
<th>ones</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

b. $120 - 37 = \underline{\phantom{100}}$

<table>
<thead>
<tr>
<th>hundreds</th>
<th>tens</th>
<th>ones</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

c. $141 - 89 = \underline{\phantom{100}}$
d. $136 - 77 = \underline{\hspace{2cm}}$

<table>
<thead>
<tr>
<th>hundreds</th>
<th>tens</th>
<th>ones</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>hundreds</th>
<th>tens</th>
<th>ones</th>
</tr>
</thead>
</table>

e. $100 - 42 = \underline{\hspace{2cm}}$

2. Fill in the missing number to complete the number sentence. Draw a place value chart and chips to model.

a. 

1  2  3  
- 5  
6  9
Lesson 27

Objective: Subtract from 200 and from numbers with zeros in the tens place.

Suggested Lesson Structure

<table>
<thead>
<tr>
<th>Activity</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluency Practice</td>
<td>(14 minutes)</td>
</tr>
<tr>
<td>Application Problem</td>
<td>(5 minutes)</td>
</tr>
<tr>
<td>Concept Development</td>
<td>(31 minutes)</td>
</tr>
<tr>
<td>Student Debrief</td>
<td>(10 minutes)</td>
</tr>
<tr>
<td><strong>Total Time</strong></td>
<td><strong>(60 minutes)</strong></td>
</tr>
</tbody>
</table>

Fluency Practice (14 minutes)

- Subtraction Facts Flash Cards 2.OA.2 (2 minutes)
- Subtraction from Tens 2.NBT.5 (3 minutes)
- Sprint: Subtraction from a Ten or a Hundred 2.NBT.5 (9 minutes)

Subtraction Facts Flash Cards (2 minutes)

Materials: (T) Flash Cards Set 2

Note: By practicing subtraction facts, students will gain fluency subtracting within 20.

Subtraction from Tens (3 minutes)

Note: This allows students to see how their take-from-ten facts help them to solve many, many problems. It also prepares them for today’s Sprint.

T: I say a basic fact, you add ten to the whole and continue until I say to stop. So after $10 - 8 = 2$, you would solve $20 - 8$, and then...?

S: $30 - 8 = 22$, $40 - 8 = 32$, $50 - 8 = 42$.

T: Yes, as high as you can before I give the signal to stop. Let’s begin. $10 - 8 = 2$.

Students work. Stop everyone when you see the slowest student has completed at least two problems.

Continue with the following possible sequence: $100 - 80$, $10 - 6$, $100 - 60$, $100 - 59$. 
Lesson 27

NYS COMMON CORE MATHEMATICS CURRICULUM

Subtract from 200 and from numbers with zeros in the tens place.

Date: 7/4/13

4.E.61

Lesson 27

Sprint: Subtraction from a Ten or a Hundred (9 minutes)

Materials: (S) Subtraction from a Ten or a Hundred Sprint

Note: Students are given the opportunity to use mental math strategies when subtracting from 10 or 100.

Application Problem (5 minutes)

Mr. Ramos has 139 pencils and 88 erasers. How many more pencils than erasers does he have?

Note: Allow students to use varied strategies. Invite pairs of students committed to different strategies to solve at the board while others work at their seats. Have those who worked at the board quickly present their solutions to their peers.

Concept Development (31 minutes)

Materials: (S) Personal white boards

Note: In the previous lesson, students used the chip model to subtract with up to two decompositions. We will be modeling today’s lesson with number disks, simply to remind you that students can work with the manipulative that best suits their level of development. From simple to complex, that would include bundles of straws, bills, concrete number disks, drawn number disks, and the chip model.

Problem 1: Model 100 as 9 tens and 10 ones and relate to a number written with changed units.

T: Show me 100 with the fewest disks possible.

T: What is the value of your disk?

S: 100.

T: Change 1 hundred for 10 tens.

S: (Draw 10 tens arranged in 5-groups.)

T: Say the number in hundreds.

S: 1 hundred.

T: Now say the number in tens.

S: 10 tens.

T: Did the value change?

S: No!

T: Show me 100 by changing 1 ten for 10 ones.

T: Say the number in hundreds.
Lesson 27

Subtract from 200 and from numbers with zeros in the tens place.

Date: 7/4/13

S: 1 hundred.
T: Say the number in tens and ones.
S: 9 tens and 10 ones.
T: Did the value change?
S: No! It’s still a hundred!
T: Let’s record this change on the written number.
T: Look at what I have written and relate it to what we just did with the disks.
S: In the first way, you change 1 hundred to 0 hundreds and 10 tens. Then you change 10 tens to 9 tens and 10 ones. → Or, you can do it all at once, and just change 1 hundred to 0 hundreds, 9 tens, and 10 ones. It makes it easier for me. 90 + 10 = 100.

Problem 2: Model 200 as 1 hundred, 9 tens, and 10 ones and relate to a number written with changed units.

T: Show me 200 with the fewest disks possible.
S: (Draw 2 hundreds disks.)
T: Change 1 hundred for 10 tens.
T: Say the number in hundreds.
S: 2 hundreds.
T: Say the number in hundreds and tens.
S: 1 hundred, 10 tens.
T: Did the value change?
S: No!
T: Now show me 200 by unbundling a ten.
S: (Draw 1 hundred, 9 tens, and 10 ones.)
T: Say the number in hundreds, tens, and ones.
S: 1 hundred, 9 tens, 10 ones.
T: Did the value change?
S: No!
T: Relate your work with the disks to these numbers showing the changed units.
S: In the first way, you change 2 hundreds to 1 hundred and 10 tens. Then, you change 10 tens to 9 tens and 10 ones. → In faster way, you just change 2 hundreds to 1 hundred, 9 tens, and 10 ones. 190 + 10 = 200.
Lesson 27: Subtract from 200 and from numbers with zeros in the tens place.

Date: 7/4/13

**Problem 3: 100 – 83**

**T:** Why would we want to show 100 as 9 tens and 10 ones?

**S:** Sometimes when you subtract, both the tens and the ones need more.

→ You need ones if you want to subtract ones. → 9 tens 10 ones is the same as 100.

**T:** Let’s see how knowing this will help us to solve some subtraction problems today.

(Write 100 – 83 on the board in the vertical form.)

**T:** What do we do first?

**T:** When I set up to subtract, I am going to draw my number disks to show the whole. (Draw 100 in number disks.) How many do you see on my place value chart?

**S:** 1 hundred, 0 tens, 0 ones.

**T:** Can we subtract 3 ones from 0 ones?

**S:** No! We need to change 1 ten for 10 ones.

**T:** But there are no tens. Does that mean we are stuck?

**S:** No because a hundred has tens in it. → Yeah, from the tens we can get some ones. → It’s what we just did. Let’s change 1 hundred for 9 tens and ten ones.

**T:** Okay. Let’s do that. Tell me what to do.

**S:** Just what she said. Change 1 hundred for 9 tens and 10 ones, and show that on your numbers, too, by crossing out.

**T:** (Work with disks and numbers.) Now, am I ready to subtract in the ones place?

**S:** Yes!

**T:** Am I ready to subtract in the tens place?

**S:** Yes!

10 ones – 3 ones is?

**S:** 7 ones.

9 tens – 8 tens is?

**S:** 1 ten.

**T:** Read me the full number sentence.

**S:** 100 – 83 = 17.

**T:** So the missing part was 17. How can I check to see if my subtraction is correct?

**S:** Add the two parts to see if you get the whole.

**T:** What are the two parts?

**S:** 17 and 83.

**T:** The whole.

---

NOTES ON MULTIPLE MEANS OF ENGAGEMENT:

If you see some students demonstrating proficiency during the lesson, have one or more lead the class in modeling these problems.
Lesson 27

Subtract from 200 and from numbers with zeros in the tens place.

Date: 7/4/13

Problem 4: 200 – 8

T: (Draw 2 hundreds on the place value chart and write 200 – 8 on the board. Draw the magnifying glass.) Let’s start at the ones place. Can I subtract 8 ones from 0 ones?

S: No!

T: Where am I going to find some ones? Talk to your partner.

S: It’s like the last problem we did. After you decompose 1 hundred, you have 1 hundred, 9 tens, and 10 ones. Unbundle a 100; then unbundle a 10. You can make 200 into 100, 10 tens, and then change 1 of the tens for 10 ones. You can change 1 hundred for 10 tens, and then change a ten for 10 ones.

T: (Unbundle 200 to make 1 hundred, 9 tens, and 10 ones.) Are we ready to subtract?

S: Yes!

T: Solve the problem by crossing out number disks, starting with the ones, and recording each step in the written form.

Have the students analyze the problem for parts and wholes as in Problem 1 and check to see the total of the parts is 200.

Guide students through solving two or three more problems that require renaming 200 as 1 hundred, 9 tens, and 10 ones. You might use the following suggested sequence: 200 – 78, 200 – 143, 200 – 111. As students show proficiency, allow them to work independently on the Problem Set.

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.
Lesson Objective: Subtract from 200 and from numbers with zeros in the tens place.

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.

- Look at Problem 1. What possible combinations of tens and ones do you notice within a unit of 100?
- How can I unbundle 100 on a place value chart? How can I do it in two steps? How can I do it in one step?
- What are two different ways that I can unbundle 200 using tens and ones? Now look at Problem 2(c). Which way did you choose to decompose? Why?
- How is Problem 2(d) significantly different from Problem 2(b)?
- Explain to your partner how you unbundled Problem 2(d), 200 – 87. Did you do it in one or two steps? Which way is easier for you?
- When you are subtracting, what clues tell you that you will have to unbundle a hundred?

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.
### Lesson 27: Subtract from 200 and from numbers with zeros in the tens place.

**Date:** 7/4/13

<table>
<thead>
<tr>
<th></th>
<th>Subtract</th>
<th># Correct</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10 - 1</td>
<td>23</td>
</tr>
<tr>
<td>2</td>
<td>100 - 10</td>
<td>24</td>
</tr>
<tr>
<td>3</td>
<td>90 - 1</td>
<td>25</td>
</tr>
<tr>
<td>4</td>
<td>100 - 11</td>
<td>26</td>
</tr>
<tr>
<td>5</td>
<td>10 - 2</td>
<td>27</td>
</tr>
<tr>
<td>6</td>
<td>100 - 20</td>
<td>28</td>
</tr>
<tr>
<td>7</td>
<td>80 - 1</td>
<td>29</td>
</tr>
<tr>
<td>8</td>
<td>100 - 21</td>
<td>30</td>
</tr>
<tr>
<td>9</td>
<td>10 - 5</td>
<td>31</td>
</tr>
<tr>
<td>10</td>
<td>100 - 50</td>
<td>32</td>
</tr>
<tr>
<td>11</td>
<td>50 - 2</td>
<td>33</td>
</tr>
<tr>
<td>12</td>
<td>100 - 52</td>
<td>34</td>
</tr>
<tr>
<td>13</td>
<td>10 - 4</td>
<td>35</td>
</tr>
<tr>
<td>14</td>
<td>100 - 40</td>
<td>36</td>
</tr>
<tr>
<td>15</td>
<td>60 - 1</td>
<td>37</td>
</tr>
<tr>
<td>16</td>
<td>100 - 41</td>
<td>38</td>
</tr>
<tr>
<td>17</td>
<td>10 - 3</td>
<td>39</td>
</tr>
<tr>
<td>18</td>
<td>100 - 30</td>
<td>40</td>
</tr>
<tr>
<td>19</td>
<td>70 - 5</td>
<td>41</td>
</tr>
<tr>
<td>20</td>
<td>100 - 35</td>
<td>42</td>
</tr>
<tr>
<td>21</td>
<td>100 - 80</td>
<td>43</td>
</tr>
<tr>
<td>22</td>
<td>100 - 81</td>
<td>44</td>
</tr>
<tr>
<td></td>
<td>Subtract</td>
<td>Improvement</td>
</tr>
<tr>
<td>---</td>
<td>----------</td>
<td>-------------</td>
</tr>
<tr>
<td>1</td>
<td>10 - 5 =</td>
<td>23</td>
</tr>
<tr>
<td>2</td>
<td>100 - 50 =</td>
<td>24</td>
</tr>
<tr>
<td>3</td>
<td>50 - 1 =</td>
<td>25</td>
</tr>
<tr>
<td>4</td>
<td>100 - 51 =</td>
<td>26</td>
</tr>
<tr>
<td>5</td>
<td>10 - 2 =</td>
<td>27</td>
</tr>
<tr>
<td>6</td>
<td>100 - 20 =</td>
<td>28</td>
</tr>
<tr>
<td>7</td>
<td>80 - 1 =</td>
<td>29</td>
</tr>
<tr>
<td>8</td>
<td>100 - 21 =</td>
<td>30</td>
</tr>
<tr>
<td>9</td>
<td>10 - 1 =</td>
<td>31</td>
</tr>
<tr>
<td>10</td>
<td>100 - 10 =</td>
<td>32</td>
</tr>
<tr>
<td>11</td>
<td>90 - 2 =</td>
<td>33</td>
</tr>
<tr>
<td>12</td>
<td>100 - 12 =</td>
<td>34</td>
</tr>
<tr>
<td>13</td>
<td>10 - 3 =</td>
<td>35</td>
</tr>
<tr>
<td>14</td>
<td>100 - 30 =</td>
<td>36</td>
</tr>
<tr>
<td>15</td>
<td>70 - 1 =</td>
<td>37</td>
</tr>
<tr>
<td>16</td>
<td>100 - 31 =</td>
<td>38</td>
</tr>
<tr>
<td>17</td>
<td>10 - 4 =</td>
<td>39</td>
</tr>
<tr>
<td>18</td>
<td>100 - 40 =</td>
<td>40</td>
</tr>
<tr>
<td>19</td>
<td>60 - 5 =</td>
<td>41</td>
</tr>
<tr>
<td>20</td>
<td>100 - 45 =</td>
<td>42</td>
</tr>
<tr>
<td>21</td>
<td>100 - 70 =</td>
<td>43</td>
</tr>
<tr>
<td>22</td>
<td>100 - 71 =</td>
<td>44</td>
</tr>
</tbody>
</table>
Lesson 27 Problem Set

Name ___________________________ Date _______________

1. Make each equation true.

   a. 1 hundred = _____ tens

   b. 1 hundred = 9 tens ______ ones

   c. 2 hundreds = 1 hundred _____ tens

   d. 2 hundreds = 1 hundred 9 tens ______ones

2. Solve vertically. Draw chips on the place value chart. Unbundle when needed.

   a. 100 - 61 = _________  
      hundreds | tens | ones

   b. 100 - 79 = _________  
      hundreds | tens | ones
Lesson 27: Subtract from 200 and from numbers with zeros in the tens place.

Date: 7/4/13

c. 200 − 7 = ________


d. 200 − 87 = ________


e. 200 − 126 = ________
1. Solve vertically. Draw chips on the place value chart. Unbundle when needed.

a. $100 - 44 = \underline{\quad}$

<table>
<thead>
<tr>
<th>hundreds</th>
<th>tens</th>
<th>ones</th>
</tr>
</thead>
</table>

b. $200 - 76 = \underline{\quad}$

<table>
<thead>
<tr>
<th>hundreds</th>
<th>tens</th>
<th>ones</th>
</tr>
</thead>
</table>
Lesson 27: Subtract from 200 and from numbers with zeros in the tens place.

1. Solve vertically. Draw chips on the place value chart. Unbundle when needed.

   a. \(100 - 37 = \) __________  
     
     \[\begin{array}{c|c|c}
     \text{hundreds} & \text{tens} & \text{ones} \\
     \hline
     & & \\
     \end{array}\]

   b. \(100 - 49 = \) __________  
     
     \[\begin{array}{c|c|c}
     \text{hundreds} & \text{tens} & \text{ones} \\
     \hline
     & & \\
     \end{array}\]

   c. \(200 - 49 = \) __________  
     
     \[\begin{array}{c|c|c}
     \text{hundreds} & \text{tens} & \text{ones} \\
     \hline
     & & \\
     \end{array}\]
Lesson 27: Subtract from 200 and from numbers with zeros in the tens place.

Date: 7/4/13

1. d. 200 - 57 = __________
   
   hundreds | tens | ones
   
   e. 200 - 83 = __________
   
   hundreds | tens | ones

2. Susan solved 200 - 91 and decided to add her answer to 91 to check her work. Explain why this strategy works.

   Susan's work:
   
   \[
   \begin{array}{c}
   200 \\
   \underline{- 91} \\
   109
   \end{array}
   \]

   Explanation:
   
   _______________________________________________________
   _______________________________________________________
   _______________________________________________________
   _______________________________________________________
Lesson 28

Objective: Subtract from 200 and from numbers with zeros in the tens place.

Suggested Lesson Structure

- Fluency Practice (10 minutes)
- Application Problem (7 minutes)
- Concept Development (33 minutes)
- Student Debrief (10 minutes)

Total Time (60 minutes)

Fluency Practice (10 minutes)

- Subtraction Fact Flash Cards 2.OA.2 (2 minutes)
- Rename the Units: Choral Response 2.NBT.1 (6 minutes)
- Take from the Tens or Ones 2.NBT.5 (2 minutes)

Subtraction Fact Flash Cards (2 minutes)

Materials: (T) Flash Cards Set 2

Note: By practicing subtraction facts, students will gain fluency subtracting within 20.

Rename the Units: Choral Response (6 minutes)

Note: This fluency will review foundations that will lead into today’s lesson.

T: (Write 10 ones = _____ ten.) Say the number sentence.
S: 10 ones = 1 ten.
T: (Write 20 ones = 1 ten _____ ones.) Say the number sentence.
S: 20 ones = 1 ten 10 ones.
T: (Write 24 ones = 1 ten _____ ones.) Say the number sentence.
S: 24 ones = 1 ten 14 ones.

Repeat the process for 27, 30, 32, 38, 40, 41, 46, 50, 63, 88.

T: (Write 100 = 9 tens _____ ones.) Say the number sentence.
S: 100 = 9 tens 10 ones.
T: (Write 101 = 9 tens _____ ones.) Say the number sentence.
Lesson 28

Subtract from 200 and from numbers with zeros in the tens place.

Date: 7/4/13

4.E.74

© 2013 Common Core, Inc. Some rights reserved. commoncore.org

This work is licensed under a Creative Commons  Attribution-NonCommercial-ShareAlike 3.0 Unported License.

Lesson 28

Subtract from 200 and from numbers with zeros in the tens place.

Take from the Tens or Ones (2 minutes)

Note: This fluency helps students to know when to unbundle a ten to subtract and when not to. This is a foundational skill for the lesson.

T: For every number sentence I say, you tell me if I take from the tens or the ones. When I say 46 – 5, you say take from the ones, but if I say 46 – 7, you say take from the tens. Ready?

T: 46 – 6.
S: Take from the ones.
T: 46 – 9.
S: Take from the tens.

Continue with the following possible sequence: 52 – 1, 52 – 4, 63 – 6, 64 – 5, 65 – 4, 68 – 8, 70 – 3.

Application Problem (7 minutes)

Jerry made 200 pizzas. He sold some of them and had 57 pizzas left. How many did he sell?

Note: Instruct students to set up a place value chart to solve this Application Problem. Some students may relate this problem to the previous day’s lesson by drawing number disks on their place value charts. Others may choose to represent the problem using a tape diagram or the arrow way.

Concept Development (33 minutes)

Materials: (S) Personal white boards

This Concept Development is intentionally designed for students to practice concepts taught in Lesson 27. Encourage students to choose any accurate math drawing to represent the subtraction. While some students may be comfortable drawing chip models, others may choose to represent the problem using number disk drawings. In either case, all students should relate their drawings to the written method.

A NOTE ON MULTIPLE MEANS OF ACTION AND EXPRESSION:

Have manipulatives available for students who have not yet mastered the ability to solve these problems without a concrete representation.
Problem 1: 106 – 58

T: (Write 106 – 58 on the board.)
T: Let’s solve 106 - 58 using a math drawing. Choose whether you want to use a disk drawing or a chip model. What number are we going to draw?
S: 106.
T: And what should I draw on my model to show that number?
S: 1 hundred and 6 ones.
T: Great. Which place do we look at first to see if we need to do any renaming?
S: The ones!
T: Are we ready to subtract in the ones place?
S: No.
T: What should we do? Turn and talk to your partner.
S: There are no tens either, so let’s rename a hundred as 9 tens and 10 ones. → That makes it 9 tens and 16 ones, because we already had 6 ones. → We can change 1 hundred into 10 tens, and then change 10 tens into 9 tens 10 ones.
T: Okay, let’s do it. Record each change.
T: Are we ready to subtract in the ones?
S: Yes.
T: In the tens?
S: Yes.
T: Show your answer in the written subtraction. What is our first step? Tell the units.
S: 16 ones – 8 ones.
T: (Model on your drawing and algorithm.) How many ones are left?
S: 8.
T: Great. Let’s try the tens. What is our problem?
S: 9 tens – 5 tens.
T: How many tens do we have left?
S: 4 tens. (Show this on the drawing and algorithm.)
T: Do we subtract any hundreds?
S: No!

Invite students to share their work. Analyze the parts and join them to see if they total 106.
Lesson 28

NYS COMMON CORE MATHEMATICS CURRICULUM

Lesson 28

Subtract from 200 and from numbers with zeros in the tens place.

Date: 7/4/13

4.E.76

Problem 2: 200 – 67

T: (Write 200 – 67 on the board.)

T: We are now going to do the same thing with another problem. Make a math drawing that represents the number we will be subtracting from. (Give them time to make their drawings.)

T: What did you draw?

S: 200. → 2 hundreds.

T: How can we rename 200 to solve 200 – 67? Turn and talk.

S: We can rename it as 1 hundred, 9 tens, and 10 ones. → Since you can't subtract from the ones or tens, we can unbundle a hundred, then unbundle a ten.

T: What place will you start subtracting?

S: The ones.

T: On your own, solve 200 – 67 using a math drawing. Again, record each change and show your answer in the written subtraction.

Repeat the above activity with this suggested sequence: 200 – 33, 103 – 59, 200 – 49. Before students begin each problem, instruct them to rename the whole. Emphasize the renaming of 200 as 1 hundred, 9 tens, 10 ones. As you circulate, remind students to draw the magnifying glass, to represent the problem using a math drawing, and to record each step in the written subtraction.

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.

A NOTE ON MULTIPLE MEANS OF ENGAGEMENT:

Allow students who prefer to work in groups to work with a partner on the Problem Set; likewise, allow students who concentrate better alone to work independently.
Lesson 28

Subtract from 200 and from numbers with zeros in the tens place.

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.

- Look at Problem 1 (a) and (b). When you are subtracting, and the whole (i.e., larger number) has a zero in the tens place, what do you know for sure? How do you know if that zero will become a 10 or a 9?
- For Problem 1(c), how did you unbundle 200 on your place value chart? Did you do it in one or two steps?
- For Problem 1(d), how did you unbundle 200 on your place value chart? Why did you show 200 that way? How did it match your written subtraction?
- Problem 2, 200 – 48, asked you to solve vertically. Could you also have solved mentally? How? Which way is quicker and easier?
- In your work today, how was unbundling 200 similar to and different from unbundling 100?

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. Solve vertically. Draw chips on the place value chart. Unbundle when needed.

   a. $109 - 56 = \underline{\hspace{2cm}}$  
      
      \begin{tabular}{c|c|c}
      \hline
      hundreds & tens & ones \\
      \hline
      \end{tabular}

   b. $103 - 34 = \underline{\hspace{2cm}}$  
      
      \begin{tabular}{c|c|c}
      \hline
      hundreds & tens & ones \\
      \hline
      \end{tabular}

   c. $200 - 155 = \underline{\hspace{2cm}}$  
      
      \begin{tabular}{c|c|c}
      \hline
      hundreds & tens & ones \\
      \hline
      \end{tabular}
2. Solve vertically without a place value chart.

200 - 148 = __________

3. Solve vertically. Draw a place value chart and chips.

Ralph has 137 fewer stamps than his older brother. His older brother has 200 stamps. How many stamps does Ralph have?
Lesson 28 Exit Ticket

1. Solve vertically. Draw chips on the place value chart. Unbundle when needed.

   a. $108 - 79 = \underline{\quad} \quad \begin{array}{c|c|c} \text{hundreds} & \text{tens} & \text{ones} \end{array}$

   b. $200 - 126 = \underline{\quad} \quad \begin{array}{c|c|c} \text{hundreds} & \text{tens} & \text{ones} \end{array}$

Name __________________________________________ Date ________________
Lesson 28 Homework

Name __________________________ Date _____________

1. Solve vertically. Draw chips on the place value chart. Unbundle when needed.

   a. $136 - 94 = \underline{\ \ \ \ \ \ \ }$
      hundreds | tens | ones

   b. $105 - 57 = \underline{\ \ \ \ \ \ \ }$
      hundreds | tens | ones

   c. $200 - 61 = \underline{\ \ \ \ \ \ \ }$
      hundreds | tens | ones
d. 200 - 107 = _________

<table>
<thead>
<tr>
<th>hundreds</th>
<th>tens</th>
<th>ones</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

e. 200 - 143 = _________

<table>
<thead>
<tr>
<th>hundreds</th>
<th>tens</th>
<th>ones</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. Herman collected 200 shells on the beach. Of those, he kept 136 shells and left the rest on the beach. How many shells did he leave on the beach?