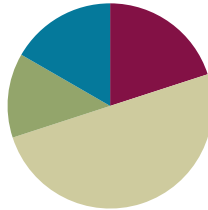# Lesson 17

Objective: Compare two three-digit numbers using <, >, and = when there are more than 9 ones or 9 tens.

Suggested Lesson Structure

■ Fluency Practice   (12 minutes)
■ Application Problem   (8 minutes)
■ Concept Development   (30 minutes)
■ Student Debrief   (10 minutes)
   Total Time   **(60 minutes)**

Fluency Practice (12 minutes)

▪ Sprint: Sums—Crossing Ten **2.OA.2**   (12 minutes)

Sprint: Sums—Crossing Ten (12 minutes)

Materials: (S) Sums—Crossing Ten Sprint

Day 2 of our "Sums and Differences" blitz continues with another sprint on sums and differences to 20.

T: Tomorrow we are going to do the exact same sprint. If you wish to take this home and study or practice to see if you can do the problems more skillfully, do so!

T: Take a moment to analyze the sprint with your partner. It is arranged from the easiest problems to the hardest.

S: It starts with the ten plus facts. Those are super easy! → Yeah, and then it goes to the nines. That is just 1 to make ten.   → Or I just do it like a ten plus and do 1 less.

T: Raise your hand if you think you might do better tomorrow!

NOTES ON MULTIPLE MEANS OF ENGAGEMENT:

The sprint can be highly motivating for students below grade level if they can stop comparing their performance to others and really take note of personal improvement.

Privately record the student's score each day. Ask her if she practiced. Celebrate improvement, even if by one question, the moment it occurs. Do this discreetly until the student is confident that she is capable of consistent success.

For English language learners, this is a real chance to shine. Math is that universal language, so calculations offer no impediment. Let them savor the adrenaline of academic success.

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Lesson 17:   Compare two three-digit numbers using <, >, and = when there are more than 9 ones or 9 tens.
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Application Problem (8 minutes)

Walking on the beach on Tuesday, Darcy collected 35 rocks. The day before, she collected 28. How many fewer rocks did she collect on Monday than on Tuesday?

T: Use your RDW process. What do you see?

S: Her 35 rocks from Tuesday and her 28 rocks from Monday.

T: Can you draw something?

S: Yes!!

T: What can you draw?

S: The rocks!

T: I'm only going to give you 2 minutes to draw. Can you think of efficient short-cuts so that you don't have to draw all the rocks?

S: Yes!

T: Okay. Do so.

S: (Students show.)

T: What number sentence did you use to find the answer?

S: 35 – 28 = ___ → 28 + ___ = 35.

T: Darcy is comparing. Talk to your partner about what she is comparing.
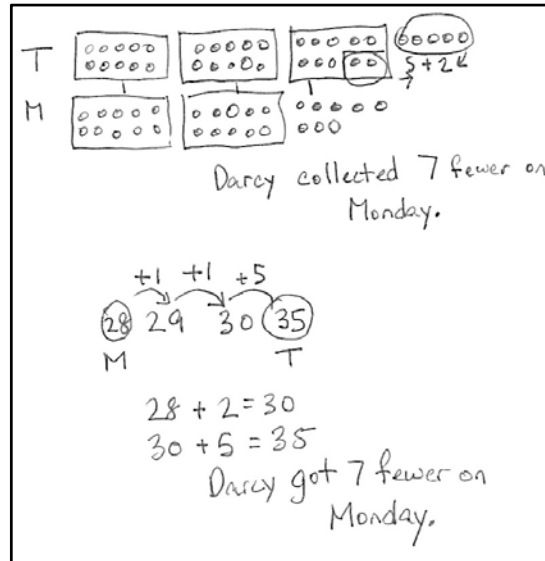
Lead the students in a conversation about subtraction and comparison. Yes, we are finding a missing part. As time permits, look at different examples of student work.

Concept Development (30 minutes)

Materials: (S) Place value mat, number disks (9 hundreds, tens and ones), one set of <, >, = symbol cards per pair

Concrete (5 minutes)

T: Partner A, show 124 on your place value mat. Partner B, show 824.

S: (Students show.)

T: Compare numbers. Place a symbol from the set between your mats to make a true statement. Read the statement.

NOTES ON MULTIPLE MEANS OF REPRESENTATION:

While students are familiar with the language of tens and ones, they may feel overwhelmed when asked to manipulate two units at once. Support English language learners by writing the mathematical equivalent to your words on the board.

Partner A	Partner B
- 4 tens 4 ones	+ 2 tens 6 ones
5 tens 6 ones	15 tens 6 ones
+ 7 tens 5 ones	-2 tens 5 ones

Point to the symbols. As students manipulate the place value disks, the visual, kinesthetic and auditory are coming together powerfully.

S: (Students place <.) 124 is less than 824.

T: Partner A, add 7 tens to your number. Partner B, take
     7 hundreds from your number.

S: (Students show.)

T: Compare. Choose the symbol to go between your
     mats. Read the statement.

S: (Students place >.) 194 is greater than 124.

T: Partner A, take 4 tens 4 ones from your number. Partner B, add 2 tens 6 ones to yours.

T: Compare numbers. Choose the symbol. Read the statement.

S: (Students place =.) 150 equals 150.

T: How many tens in 150?

S: 15!

T: Partner A, show 5 tens 6 ones. Partner B, show 15 tens 6 ones.

S: (Students show.)

T: Compare numbers and place your symbol. Read the statement, naming just tens and ones.

S: (Students place <.) 5 tens 6 ones is less than 15 tens 6 ones.

T: Partner A, add 7 tens 5 ones to your number. Partner B, take 2 tens 5 ones from your number.

S: (Students show.)

T: Compare numbers and place your symbol. Read the statement naming just tens and ones.

S: (Students place =.) 13 tens 1 one equals 13 tens 1 one.

T: (Write 213 on the board.) Read my number in numeral form.

S: 113!

T: Is my number greater than, less than, or equal to yours? Decide with your partner, then hold up a
     symbol.

S: (Students hold up <.)

T: Say the number sentence. Say my number in numeral form, and name yours with tens and ones.

S: 113 is less than 13 tens 1 one.

Pictorial (10 minutes)

Materials: (T) 2 place value charts for projection, number disks (15 hundreds, 15 tens, 15 ones) (S) Personal
             white boards

As an alternative to projecting the place value mats, the teacher may slip place value charts templates into a
personal board and use a marker to draw.

T: (Show 55 on the first chart.) Write this number in numeral form. Turn your board horizontally so
     you have room to write a second number beside it.

S: (Students write 55.)

T: (Show 50 on the second chart.) Now write this number in unit form.

S: (Students write 5 tens.)

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                                   more than 9 ones or 9 tens.
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T: Draw a symbol comparing the numbers. Read the number sentence.

S: (Students draw >.) 55 is greater than 5 tens.

T: Good. Erase. (Show 273 on the first chart.) Write in unit form, naming only tens and ones.

S: (Students write 27 tens 3 ones.)

T: (Show 203 on the second chart.) Write in expanded form.

S: (Students write 200 + 3 or 3 + 200.)

T: Draw a symbol to compare the numbers, then read the number sentence.

S: (Students draw >.) 27 tens 3 ones is greater than 200 + 3.

T: Nice. Erase. (Show 406 on the first chart.) Write in word form.

S: (Students write four hundred six.)

T: (Show 436 on the second chart.) Write in expanded form.

S: (Students write 400 + 30 + 6, or a variation on that order.)

T: Draw a symbol and read.

S: (Students draw <.) Four hundred six is less than 400 + 30 + 6.

T: (Show 920 on the first chart.) Write in numeral form.

S: (Students show 920.)

T: Good. Erase. (Show 880 on the second chart.) Write in unit form, naming only tens and ones.

S: (Students write 88 tens.)

T: Draw a symbol and read.

S: (Students draw >.) 920 is greater than 88 tens.

T: Good. On your board, add '+ 4 tens' after 88 tens. Solve. Change the symbol if you need to.

S: (Students work.)

T: Partner A, show your partner how you solved 88 tens + 4 tens.

S: I looked at the teacher's picture. I started with 880 and counted by tens 4 times - 890, 900, 910, 920. → Oops, I changed it to 884! → I did 88 + 4. Then I got 92, so I knew it changed to 92 tens.

T: Partner B, talk to your partner about what happened to the symbol. Read the number sentence.

S: Once they were both 92 tens I changed the symbol to =. Now it says 92 tens equals 92 tens.

Lesson 17: Compare two three-digit numbers using <, >, and = when there are more than 9 ones or 9 tens.

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Problem Set (15 minutes)

Students should do their personal best to complete the Problem Set within the allotted 15 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.

Review the Problem Set instructions with students. Allow 12 minutes for completion.

Student Debrief (10 minutes)

Lesson Objective: Compare two three-digit numbers using <, >, and = when there are more than 9 ones or 9 tens.

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.

- T: Bring your Problem Set to our Debrief.
- S: Check your work carefully with a partner as I circulate. Put a little star next to the ones that were hard.
- T: (After two minutes.) Which ones were hard for you?
- S: Letter 'i' in the star section was hard!
- T: Tell us what made it difficult.
- S: I thought doing 47 tens + 23 tens was tricky because it's a lot of tens to draw.
- T: That's true! Drawing takes a while. Can someone share a more efficient strategy?
- S: I used the 3 from 23 to make a ten with 47. That was 50. Then it was just 50 + 20. Easy. 70 tens!
- T: Turn and talk to your partner about Hyun-Mee's strategy for quickly solving 47 tens + 23 tens.
- S: She made a ten! I guess you could just do 7 + 3 to get a ten too, then add 4 tens, 2 tens and 1 ten.
- T: What's another question you starred?

Circle less than, equal to, or greater than. Whisper the complete sentence.

a) 9 tens **90** ~~less than~~ ~~equal to~~ (greater than) 88.

b) 132 is (equal to) **132** 13 tens 2 ones. [less than / greater than]

c) 102 (less than) **152** 15 tens 2 ones. [equal to / greater than]

d) 199 is (less than) **200** 20 tens. [equal to / greater than]

e) 62 tens 3 ones is **622** < (=) > 623

f) 300 + 40 + 9 is **349** < = (>) **340** 34 tens.

g) 80 + 700 + 2 is **782** (<) = > **872** eight hundred seventy two.

h) 8 + 600 is **608** (<) = > **680** 68 tens.

i) Seven hundred thirteen is **713** < = (>) **700** 47 tens + 23 tens.

j) 18 tens + 4 tens is **~~22~~ 220** (<) = > **240** 29 tens – 5 tens.

Write >, < or =.

a) 99 (<) 10 tens **100**

b) 116 (>) 11 tens 5 ones **115**

c) 2 hundreds 37 ones (=) 237 **237**

d) Three hundred twenty (<) 34 tens **320** **340**

e) 5 hundreds 2 tens 4 ones (<) 53 tens **524** **530**

f) 104 (<) 1 hundred 4 tens **140**

g) 40 + 9 + 600 (=) 9 ones 64 tens **649** **649**

h) 700 + 4 (<) 74 tens **704** **740**

i) Twenty two tens (>) Two hundreds twelve ones **220** **212**

j) 7 + 400 + 20 (=) 42 tens 7 ones **427** **427**

k) 5 hundreds 24 ones (>) 400 + 2 + 50 **524** **452**

l) 69 tens + 2 tens (=) 710 **~~≠~~ 710**

m) 20 tens (<) two hundred ten ones **200** **210**

n) 72 tens – 12 tens (>) 60 **600**

o) 84 tens + 10 tens (>) 9 hundreds 4 ones **~~8~~ 940** **904**

p) 3 hundreds 21 ones (>) 18 tens + 14 tens **321** **320**

Lesson 17:   Compare two three-digit numbers using <, >, and = when there are more than 9 ones or 9 tens.

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S: Letter 'g' in the heart section. I didn't notice the units are mixed up in the number that's unit form. I thought it was 964 instead of 649.

T: What will you do differently to avoid that mistake next time?

S: I need to slow down and read more carefully. I wasn't really paying attention to units, just to order.

T: Thanks for pointing that out, Austin. Thumbs up if you made that mistake on one of the problems.

S: (Several students show thumbs up.)

T: Did anyone have a strategy for paying attention to units?

S: As I read the problems I just wrote the numbers in numeral form. That way I didn't get messed up.

T: Nice. It's important to have little strategies for helping yourself.

T: Head back to your seats to complete your exit ticket.

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 17:   Compare two three-digit numbers using <, >, and = when there are more than 9 ones or 9 tens.
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A   # Correct _____

Add.

1	9 + 2 =		23	4 + 7 =	
2	9 + 3 =		24	4 + 8 =	
3	9 + 4 =		25	5 + 6 =	
4	9 + 7 =		26	5 + 7 =	
5	7 + 9 =		27	3 + 8 =	
6	10 + 1 =		28	3 + 9 =	
7	10 + 2 =		29	2 + 9 =	
8	10 + 3 =		30	5 + 10 =	
9	10 + 8 =		31	5 + 8 =	
10	8 + 10 =		32	9 + 6 =	
11	8 + 3 =		33	6 + 9 =	
12	8 + 4 =		34	7 + 6 =	
13	8 + 5 =		35	6 + 7 =	
14	8 + 9 =		36	8 + 6 =	
15	9 + 8 =		37	6 + 8 =	
16	7 + 4 =		38	8 + 7 =	
17	10 + 5 =		39	7 + 8 =	
18	6 + 5 =		40	6 + 6 =	
19	7 + 5 =		41	7 + 7 =	
20	9 + 5 =		42	8 + 8 =	
21	5 + 9 =		43	9 + 9 =	
22	10 + 6 =		44	4 + 9 =	

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Lesson 17: Compare two three-digit numbers using <, >, and = when there are more than 9 ones or 9 tens.
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B

Add.

Improvement _____   # Correct _____

1	10 + 1 =		23	5 + 6 =	
2	10 + 2 =		24	5 + 7 =	
3	10 + 3 =		25	4 + 7 =	
4	10 + 9 =		26	4 + 8 =	
5	9 + 10 =		27	4 + 10 =	
6	9 + 2 =		28	3 + 8 =	
7	9 + 3 =		29	3 + 9 =	
8	9 + 4 =		30	2 + 9 =	
9	9 + 8 =		31	5 + 8 =	
10	8 + 9 =		32	7 + 6 =	
11	8 + 3 =		33	6 + 7 =	
12	8 + 4 =		34	8 + 6 =	
13	8 + 5 =		35	6 + 8 =	
14	8 + 7 =		36	9 + 6 =	
15	7 + 8 =		37	6 + 9 =	
16	7 + 4 =		38	9 + 7 =	
17	10 + 4 =		39	7 + 9 =	
18	6 + 5 =		40	6 + 6 =	
19	7 + 5 =		41	7 + 7 =	
20	9 + 5 =		42	8 + 8 =	
21	5 + 9 =		43	9 + 9 =	
22	10 + 8 =		44	4 + 9 =	

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Lesson 17:   Compare two three-digit numbers using <, >, and = when there are more than 9 ones or 9 tens.
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3.F.22

Name _____   Date _____

1. Whisper count as you show the numbers with place value disks.

A	B
Draw 217 using hundreds, tens, and ones.	Draw 21 tens 7 ones.

<
=
>

A	B
Draw 17 ones 1 hundred.	Draw 17 ones 1 hundred.

<
=
>

Lesson 17: Compare two three-digit numbers using <, >, and = when there are more than 9 ones or 9 tens.
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2. Circle less than, equal to, or greater than. Whisper the complete sentence.

a. 9 tens is   less than
                  equal to   88.
                  greater than

b. 132 is   less than
              equal to   13 tens 2
  ones.   greater than

c. 102 is   less than
              equal to   15 tens 2 ones.
              greater than

d. 199 is   less than
              equal to   20 tens.
              greater than

e. 62 tens 3 ones is   < = >   623

f. 80 + 700 + 2 is   < = >   eight hundred seventy two.

g. 8 + 600 is   < = >   68 tens

h. Seven hundred thirteen is < = >   47 tens + 23 tens.

i. 18 tens + 4 tens is   < = >   29 tens – 5 tens.

j. 300 + 40 + 9 is   < = >   34 tens.

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Lesson 17: Compare two three-digit numbers using <, >, and = when there are more than 9 ones or 9 tens.
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3.F.24

3. Write >, < or =.

   a. 99 ◯ 10 tens

   b. 116 ◯ 11 tens 5 ones

   c. 2 hundreds 37 ones ◯ 237

   d. Three hundred twenty ◯ 34 tens

   e. 5 hundreds 2 tens 4 ones ◯ 53 tens

   f. 104 ◯ 1 hundred 4 tens

   g. 40 + 9 + 600 ◯ 9 ones 64 tens

   h. 700 + 4 ◯ 74 tens

   i. Twenty two tens ◯ Two hundreds twelve ones

   j. 7 + 400 + 20 ◯ 42 tens 7 ones

   k. 5 hundreds 24 ones ◯ 400 + 2 + 50

   l. 69 tens + 2 tens ◯ 710

   m. 20 tens ◯ two hundred ten ones

   n. 72 tens – 12 tens ◯ 60

   o. 84 tens + 10 tens ◯ 9 hundreds 4 ones

   p. 3 hundreds 21 ones ◯ 18 tens + 14 tens

COMMON CORE

Lesson 17: Compare two three-digit numbers using <, >, and = when there are more than 9 ones or 9 tens.

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3.F.25

Name _____   Date _____

Circle or write >, <, or =.

A	B
Draw 142 using hundreds, tens, and ones.	Draw 12 tens 4 ones.

<

=

>

a. 1 hundred 6 tens   ◯   106

b. 74 tens   ◯   700 + 4

c. Thirty tens   ◯   300

d. 21 ones 3 hundreds   ◯   31 tens

Lesson 17: Compare two three-digit numbers using <, >, and = when there are more than 9 ones or 9 tens.
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Name _____   Date _____

1.   Whisper count as you show the numbers with place value disks.

<table>
<tr><td align="center">A</td><td align="center">B</td></tr>
<tr><td align="center">Draw 13 ones 2 hundred.</td><td align="center">Draw 12 tens 8 ones.</td></tr>
</table>

<

=

>

Lesson 17:   Compare two three-digit numbers using <, >, and = when there are more than 9 ones or 9 tens.
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2. Write >, <, or =.

a. 199 ◯ 10 tens

b. 236 ◯ 23 tens 5 ones

c. 21 tens ◯ Two hundred twenty

d. 380 ◯ 3 hundred 8 tens

e. 20 + 4 + 500 ◯ 2 ones 45 tens

f. 600 + 7 ◯ 76 tens

g. 400 + 2 + 50 ◯ 524

h. 59 tens + 2 tens ◯ 610

i. 506 ◯ 50 tens

j. 97 tens – 12 tens ◯ 85

k. 67 tens + 10 tens ◯ 7 hundreds 7 ones

l. 8 hundreds 13 ones ◯ 75 ten

Lesson 17: Compare two three-digit numbers using <, >, and = when there are more than 9 ones or 9 tens.
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