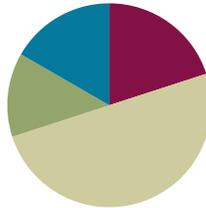


## Lesson 17

**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)
<b>Total Time</b>	<b>(60 minutes)</b>



### 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: (After students have taken the Sprint.) 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 9+ facts. That's easy! You make a ten! → Or, I just do it like a 10+ and do 1 less. → Yeah, and then it goes to the 10+ facts. Those are super easy!
- 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 working below grade level if they can stop comparing their performance to others and really take note of personal improvement.

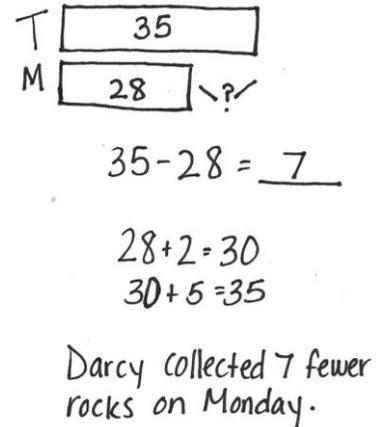
Privately record the student's score each day. Ask her if she practiced. Celebrate improvement, even if by one question, the moment it occurs. Do this discreetly until the student is confident that she is capable of consistent success.

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

**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 two minutes to draw. Can you think of efficient shortcuts so that you don't have to draw all the rocks?
- S: Yes!
- T: Okay. Do so.
- S: (Show.)
- T: What problem did you write to find the answer?
- S:  $35 - 28 = \underline{\quad} \rightarrow 28 + \underline{\quad} = 35$ .
- T: Darcy is comparing. Talk to your partner about what she is comparing.



T 35  
M 28

$35 - 28 = 7$

$28 + 2 = 30$   
 $30 + 5 = 35$

Darcy collected 7 fewer rocks on Monday.

Lead the students in a conversation about subtraction and comparison. Yes, they are finding a missing part. As time permits, look at different examples of student work.

**Concept Development (30 minutes)**

Materials: (S) Unlabeled hundreds place value chart (Lesson 8 Template), place value disks (9 hundreds, tens, and ones) per student; one set of pre-cut  $<$ ,  $>$ ,  $=$  symbol cards (Lesson 15 Template 1) per pair

**Concrete (5 minutes)**

Note: Have the student on the left be Partner A.

- T: Partner A, show 124 on your place value chart. Partner B, show 824.
- S: (Show.)
- T: Compare numbers. Place a symbol from the set between your charts to make a true statement. Read the statement.
- S: (Place  $<$ .) 124 is less than 824.



**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 the 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.

- T: Partner A, add 7 tens to your number. Partner B, take 7 hundreds from your number.  
S: (Show.)
- T: Compare. Choose the symbol to go between your charts. Read the statement.  
S: (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: (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: (Show.)
- T: Compare numbers, and place your symbol. Read the statement, naming just tens and ones.  
S: (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: (Show.)
- T: Compare numbers, and place your symbol. Read the statement naming just tens and ones.  
S: (Place  $=$ .) 13 tens 1 one equals 13 tens 1 one.
- T: (Write 113 on the board.) Read my number in standard 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: (Hold up  $<$ .)
- T: Say the number sentence. Say my number in standard form, and name yours with tens and ones.  
S: 113 is less than 13 tens 1 one.

### Pictorial (10 minutes)

Materials: (T) 2 unlabeled hundreds place value charts (Lesson 8 Template) for projection, place value disks (17 hundreds, 15 tens, 15 ones) (S) Personal white board

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

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

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

S: (Write 5 tens.)

T: Draw a symbol comparing the numbers. Read the number sentence.

S: (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: (Write 27 tens 3 ones.)

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

S: (Write  $200 + 3$  or  $3 + 200$ .)

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

S: (Draw  $>$ .) 27 tens 3 ones is greater than  $200 + 3$ .

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

S: (Write four hundred six.)

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

S: (Write  $400 + 30 + 6$  or a variation on that order.)

T: Draw a symbol and read.

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

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

S: (Show 920.)

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

S: (Write 88 tens.)

T: Draw a symbol and read.

S: (Draw  $>$ .) 920 is greater than 88 tens.

T: Good. On your board, write  $+ 4$  tens after 88 tens. Solve. Change the symbol if you need to.

S: (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.  $\rightarrow$  Oops, I changed it to 884.  $\rightarrow$  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.

Comparisons

$55 > 5$  tens

$27$  tens 3 ones  $> 200 + 3$

four hundred six  $< 400 + 30 + 6$

$920 > 88$  tens

$920 = 88$  tens + 4 tens

MP.6

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

Review the Problem Set instructions with students.

### 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: (Allow two minutes.) Which ones were hard for you?
- S: Problem 2(h) 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 and then add 4 tens, 2 tens, and 1 ten.

NYS COMMON CORE MATHEMATICS CURRICULUM Lesson 17 Problem Set 2•3

Name: Jessa Date: \_\_\_\_\_

1. Whisper count as you show the numbers with place value disks. Circle  $>$ ,  $<$ , or  $=$ .

a. Draw 217 using hundreds, tens, and ones.      b. Draw 21 tens 7 ones.

c. Draw 17 ones 1 hundred.      d. Draw 1 hundred 1 ten 7 ones.

COMMON CORE Lesson 17: Compare two three-digit numbers using  $<$ ,  $>$ , and  $=$  when there are more than 9 ones or 9 tens. Date: 6/4/14 engage<sup>ny</sup> 3.F.22

NYS COMMON CORE MATHEMATICS CURRICULUM Lesson 17 Problem Set 2•3

2. Circle less than ( $<$ ), equal to ( $=$ ), or greater than ( $>$ ). Whisper the complete sentence.

a. 9 tens is less than 88.      b. 132 is equal to 13 tens 2 ones.

c. 102 is less than 15 tens 2 ones.      d. 199 is less than 20 tens.

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.  $470 + 230 = 600 + 100 = 700$

i. 18 tens + 4 tens is  $(=) >$  29 tens - 5 tens.  $24 \text{ tens} = 240$

j.  $300 + 40 + 9$  is  $< (=)$  34 tens.  $340$

COMMON CORE Lesson 17: Compare two three-digit numbers using  $<$ ,  $>$ , and  $=$  when there are more than 9 ones or 9 tens. Date: 6/4/14 engage<sup>ny</sup> 3.F.22

- T: What’s another question you started?
- S: Problem 3(g). 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 standard 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.

Lesson 17 Problem Set 2•3

3. Write  $>$ ,  $<$  or  $=$ .

a.  $99$   $<$   $10$  tens  
 $99$   $<$   $100$

b.  $116$   $>$   $11$  tens  $5$  ones  
 $116$   $>$   $110 + 5 = 115$

c.  $2$  hundreds  $37$  ones  $=$   $237$   
 $237$

d.  $3$  hundred  $20$   $<$   $34$  tens  
 $320$   $<$   $340$

e.  $5$  hundreds  $2$  tens  $4$  ones  $<$   $53$  tens  
 $524$   $<$   $530$

f.  $104$   $<$   $1$  hundred  $4$  tens  
 $104$   $<$   $140$

g.  $40 + 9 + 600$   $=$   $9$  ones  $64$  tens  
 $649$   $=$   $649$

h.  $700 + 4$   $<$   $74$  tens  
 $704$   $<$   $740$

i.  $20$  tens  $>$   $2$  hundreds  $12$  ones  
 $200$   $>$   $212$

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  $=$   $710$   
 $690 + 20 = 710$

m.  $20$  tens  $<$   $2$  hundred  $10$  ones  
 $200$   $<$   $210$

n.  $72$  tens  $- 12$  tens  $>$   $60$   
 $60$  tens  $= 600$

o.  $84$  tens  $+ 10$  tens  $>$   $9$  hundreds  $4$  ones  
 $940$   $>$   $904$

p.  $3$  hundreds  $21$  ones  $>$   $18$  tens  $+ 14$  tens  
 $321$   $>$   $180 + 140 = 320$

COMMON CORE Lesson 17: Compare two three-digit numbers using  $<$ ,  $>$ , and  $=$  when there are more than 9 ones or 9 tens. engage<sup>ny</sup> 3.F.25  
 Date: 5/13/14  
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**Exit Ticket (3 minutes)**

After the Student Debrief, instruct students to complete the Exit Ticket. A review of their work will help with assessing students’ understanding of the concepts that were presented in today’s lesson and planning more effectively for future lessons. The questions may be read aloud to the students.

**A**

Number Correct: \_\_\_\_\_

Sums—Crossing Ten

1.	$9 + 2 =$	
2.	$9 + 3 =$	
3.	$9 + 4 =$	
4.	$9 + 7 =$	
5.	$7 + 9 =$	
6.	$10 + 1 =$	
7.	$10 + 2 =$	
8.	$10 + 3 =$	
9.	$10 + 8 =$	
10.	$8 + 10 =$	
11.	$8 + 3 =$	
12.	$8 + 4 =$	
13.	$8 + 5 =$	
14.	$8 + 9 =$	
15.	$9 + 8 =$	
16.	$7 + 4 =$	
17.	$10 + 5 =$	
18.	$6 + 5 =$	
19.	$7 + 5 =$	
20.	$9 + 5 =$	
21.	$5 + 9 =$	
22.	$10 + 6 =$	

23.	$4 + 7 =$	
24.	$4 + 8 =$	
25.	$5 + 6 =$	
26.	$5 + 7 =$	
27.	$3 + 8 =$	
28.	$3 + 9 =$	
29.	$2 + 9 =$	
30.	$5 + 10 =$	
31.	$5 + 8 =$	
32.	$9 + 6 =$	
33.	$6 + 9 =$	
34.	$7 + 6 =$	
35.	$6 + 7 =$	
36.	$8 + 6 =$	
37.	$6 + 8 =$	
38.	$8 + 7 =$	
39.	$7 + 8 =$	
40.	$6 + 6 =$	
41.	$7 + 7 =$	
42.	$8 + 8 =$	
43.	$9 + 9 =$	
44.	$4 + 9 =$	

**B**

Number Correct: \_\_\_\_\_

Improvement: \_\_\_\_\_

Sums—Crossing Ten

1.	$10 + 1 =$	
2.	$10 + 2 =$	
3.	$10 + 3 =$	
4.	$10 + 9 =$	
5.	$9 + 10 =$	
6.	$9 + 2 =$	
7.	$9 + 3 =$	
8.	$9 + 4 =$	
9.	$9 + 8 =$	
10.	$8 + 9 =$	
11.	$8 + 3 =$	
12.	$8 + 4 =$	
13.	$8 + 5 =$	
14.	$8 + 7 =$	
15.	$7 + 8 =$	
16.	$7 + 4 =$	
17.	$10 + 4 =$	
18.	$6 + 5 =$	
19.	$7 + 5 =$	
20.	$9 + 5 =$	
21.	$5 + 9 =$	
22.	$10 + 8 =$	

23.	$5 + 6 =$	
24.	$5 + 7 =$	
25.	$4 + 7 =$	
26.	$4 + 8 =$	
27.	$4 + 10 =$	
28.	$3 + 8 =$	
29.	$3 + 9 =$	
30.	$2 + 9 =$	
31.	$5 + 8 =$	
32.	$7 + 6 =$	
33.	$6 + 7 =$	
34.	$8 + 6 =$	
35.	$6 + 8 =$	
36.	$9 + 6 =$	
37.	$6 + 9 =$	
38.	$9 + 7 =$	
39.	$7 + 9 =$	
40.	$6 + 6 =$	
41.	$7 + 7 =$	
42.	$8 + 8 =$	
43.	$9 + 9 =$	
44.	$4 + 9 =$	

Name \_\_\_\_\_

Date \_\_\_\_\_

1. Whisper count as you show the numbers with place value disks. Circle  $>$ ,  $<$ , or  $=$ .

a. Draw 217 using hundreds, tens, and ones.

b. Draw 21 tens and 7 ones.

--	--	--

$<$

$=$

$>$

--	--	--

c. Draw 1 hundred and 17 ones.

d. Draw 1 hundred 1 ten and 7 ones.

--	--	--

$<$

$=$

$>$

--	--	--

2. Circle less than (<), equal to (=), or greater than (>). Whisper the complete sentence.

a. 9 tens is \_\_\_\_\_ 88.

less than
equal to
greater than

b. 132 is \_\_\_\_\_ 13 tens 2 ones.

less than
equal to
greater than

c. 102 is \_\_\_\_\_ 15 tens 2 ones.

less than
equal to
greater than

d. 199 is \_\_\_\_\_ 20 tens

less than
equal to
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.

3. Write  $>$ ,  $<$ , or  $=$ .

a.  $99$    $10$  tens

b.  $116$    $11$  tens  $5$  ones

c.  $2$  hundreds  $37$  ones   $237$

d.  $3$  hundreds  $20$    $34$  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.  $22$  tens   $2$  hundreds  $12$  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   $2$  hundred  $10$  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

Name \_\_\_\_\_

Date \_\_\_\_\_

1. Whisper count as you show the numbers with place value disks. Circle  $>$ ,  $<$ , or  $=$ .

a. Draw 142 using hundreds, tens, and ones.

b. Draw 12 tens 4 ones.

--	--	--

$<$

$=$

$>$

--	--	--

2. Write  $>$ ,  $<$ , or  $=$ .

a. 1 hundred 6 tens  106

b. 74 tens   $700 + 4$

c. Thirty tens  300

d. 21 ones 3 hundreds  31 tens

Name \_\_\_\_\_

Date \_\_\_\_\_

1. Whisper count as you show the numbers with place value disks. Circle  $>$ ,  $<$ , or  $=$ .

a. Draw 13 ones and 2 hundreds.

--	--	--

b. Draw 12 tens and 8 ones.

--	--	--

$<$   
 $=$   
 $>$

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 tens