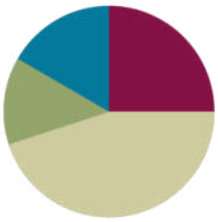
Lesson 7

Objective: Write, read, and relate base ten numbers in all forms.

Suggested Lesson Structure



☐	Fluency Practice	(15 minutes)
☐	Concept Development	(27 minutes)
■	Application Problem	(8 minutes)
■	Student Debrief	(10 minutes)
	Total Time	**(60 minutes)**

Fluency Practice (15 minutes)

- Place Value **2.NBT.1**, **2.NBT.3** (4 minutes)
- Sprint: Expanded Form **2.NBT.3** (8 minutes)
- Skip-Count Up and Down by $10 Between $45 and $125 **2.NBT.2**, **2.NBT.8** (3 minutes)

Place Value (4 minutes)

Note: This fluency activity reviews place value concepts to prepare students for today's lesson.

T: (Write 157 on the board.) Say the number.

S: 157.

T: Say 157 in unit form.
S: 1 hundred 5 tens 7 ones.
T: Say 157 in expanded form.
S: 100 + 50 + 7.
T: What is 50 + 7 + 100?
S: 157.
T: What is 7 + 100 + 50?
S: 157.
T: How many ones are in 157?
S: 157 ones.
T: How many tens are in 157?
S: 15 tens.
T: What digit is in the ones place?
S: 7.
T: What is the value of the digit in the tens place?
S: 50.

Sprint: Expanded Form (8 minutes)

Materials: (S) Expanded Form Sprint

Skip-Count Up and Down by $10 Between $45 and $125 (3 minutes)

Materials: (T) 12 ten-dollar bills, 1 five-dollar bill

T: (Lay out $45 so that all students can see.)

When I signal, tell the total value of the bills.

S: 45 dollars!

T: Good. Watch carefully as I change the total value. Count the new amount as I make it.

T: (Lay down ten-dollar bills to make $55, $65, $75, $85, $95, $105, $115, $125.)

S: (Respond in kind.)

T: (Take ten-dollar bills to make $115, $105, $95, $85, $75.)

S: (Respond in kind.)

T: (Lay down ten-dollar bills to make $85, $95, $105, $115, $125.)

S: (Respond in kind.)

T: (Take ten-dollar bills to make $115, $105, $95.)

S: (Respond in kind.)

T: (Continue alternating practice counting up and down, crossing back over numbers that students demonstrate difficulty counting.)

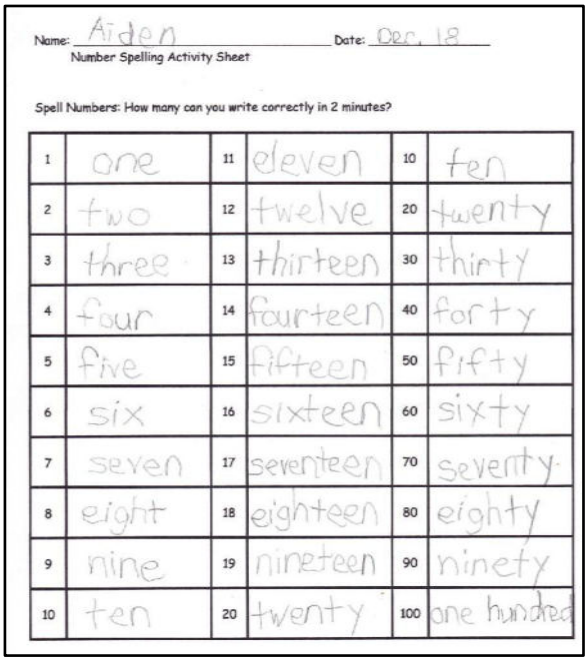
Sometimes a line of questioning can be further broken down to scaffold for English language learners or students working below grade level. It is much easier to see the change in the tens place when the value is expressed in unit form. Add the $10 and give wait time. "4 tens 5 dollars plus $10 is…? (provide sufficient wait time) 5 tens 5 dollars."

Concept Development (27 minutes)

Word Form, Unit Form, and Standard Form (5 minutes)

Materials: (S) Number spelling activity sheet (Activity Sheet), personal white board

T: From your spelling races (pictured to the right), I know you have worked hard to learn to read and spell numbers. You have two minutes to write as



Name: Aiden Date: Dec. 18

Number Spelling Activity Sheet

Spell Numbers: How many can you write correctly in 2 minutes?

1	one	11	eleven	10	ten
2	two	12	twelve	20	twenty
3	three	13	thirteen	30	thirty
4	four	14	fourteen	40	forty
5	five	15	fifteen	50	fifty
6	six	16	sixteen	60	sixty
7	seven	17	seventeen	70	seventy
8	eight	18	eighteen	80	eighty
9	nine	19	nineteen	90	ninety
10	ten	20	twenty	100	one hundred

many numbers as you can.

S: (Write.)

T: Stop. Show me your personal white boards. (Review each one quickly.)

T: Check your work with your partner. Did you improve since the last time we did it? How many students spelled all the numbers to 10 correctly?

S: (Some students raise hands.)

T: Teen numbers. (Continue the process.)

T: Ok. I will show you a number in word or unit form. You write the number, we call that **standard form**, on your boards.

T: (Write *four hundred sixty-five*.)

S: (Write *465* and show at the signal.)

T: (Write *two hundred seventeen*.)

S: (Write *217* and show at the signal.)

T: (Write *nine hundred one*.)

S: (Write *901* and show at the signal.)

T: (Write *2 tens 7 hundreds 3 ones*.)

S: (Write *723* and show at the signal.)

T: (Write *13 tens 2 ones*.)

S: (Write *132* and show at the signal.)

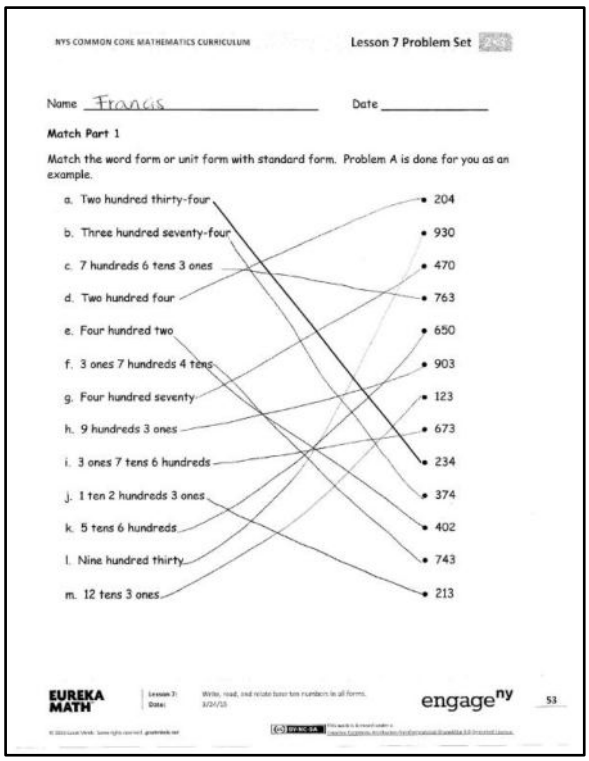
Continue with more examples. Alternate between word form and unit form unless students need to focus on one type before moving on. We work toward mastery while avoiding predictable patterns that can lead to rigid thinking. The Problem Set provides a possible sequence to follow.

Problem Set Part 1 (5 minutes)

Students should do their personal best to complete the Problem Set within the allotted 5 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.

Materials: (S) Problem Set Part 1 (pictured to the right)

- A, B, C: Three non-zero digits in standard order.
- D, E, G, L: Word or unit form in standard order but with no ones or tens.
- H: Unit form with no tens.
- F, I, J, K: Unit form out of order.
- M: More than 9 units.



NYS COMMON CORE MATHEMATICS CURRICULUM Lesson 7 Problem Set

Name Francis Date

Match Part 1

Match the word form or unit form with standard form. Problem A is done for you as an example.

a. Two hundred thirty-four	204
b. Three hundred seventy-four	930
c. 7 hundreds 6 tens 3 ones	470
d. Two hundred four	763
e. Four hundred two	650
f. 3 ones 7 hundreds 4 tens	903
g. Four hundred seventy	123
h. 9 hundreds 3 ones	673
i. 3 ones 7 tens 6 hundreds	234
j. 1 ten 2 hundreds 3 ones	374
k. 5 tens 6 hundreds	402
l. Nine hundred thirty	743
m. 12 tens 3 ones	213

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Students performing above grade level can be released to work on the Problem Set while keeping a group and giving them appropriate problems. Stay with a given type until they have it. Move on quickly when they do. Students who have completely caught on should move on to the Problem Set.

Early finishers might be provided with markers and sentence strips. They can create examples of the word or unit form to be used in the Student Debrief. The final problem is meant to lead into the next segment of the lesson.

More than 9 of a Unit (12 minutes)

Materials: (S) 21 ones and 21 tens per pair, personal white board

T: Partner A, with your straws, show me 12 ones.
S: (Count out 12 ones.)
T: Express 12 ones as tens and ones.
S: 1 ten 2 ones.
T: Tell the total value of 1 ten 2 ones.
S: 12.
T: Partner B, with your straws, show me 12 tens.
S: (Count out 12 tens.)
T: Express 12 tens as hundreds and tens.
S: 1 hundred 2 tens.
T: Tell the total value of 1 hundred 2 tens.
S: 120.
T: Turn to your partner and compare 12 ones to 12 tens.
S: They both have 12, but the units are different. □ 12 ones makes 1 ten 2 ones, and 12 tens makes 1 hundred 2 tens. □ 12 ones is 12, and 12 tens is 120.
T: Partner A, with your straws, show me 15 tens. Partner B, show me 15 ones.
T: Express to each other the value of your straws using the largest unit possible.
S: 1 ten 5 ones. □ 1 hundred 5 tens.

When a Problem Set involves significant reading, students need support from a visual. Post *hundred* with a picture of a bundle of one hundred, for example.

Also, this is an opportunity for more fluent English language learners to show off and support their peers in small groups or partnerships.

T: Tell the total value of 1 hundred 5 tens.
S: 150.
T: Compare 15 ones to 15 tens with your partner.
S: (Compare.)
T: Partner A, show me 21 ones. Partner B, show me 21 tens.
T: Express 21 ones as tens and ones.
S: 2 tens 1 one.
T: Express 21 tens as hundreds and tens.
S: 2 hundreds 1 ten.
T: What is the total value of 2 hundreds 1 ten?
S: 210.
T: Compare 21 ones to 21 tens with your partner.

S: (Compare.)

T: Put your straws away. On your personal white boards, express 68 ones as tens and ones.

S: (Write and show at the signal *6 tens 8 ones*.)

T: On your boards, express 68 tens as hundreds and tens.

S: 6 hundreds 8 tens.

T: Write the total value of 6 hundreds 8 tens.

S: (Write and show at the signal *680*.)

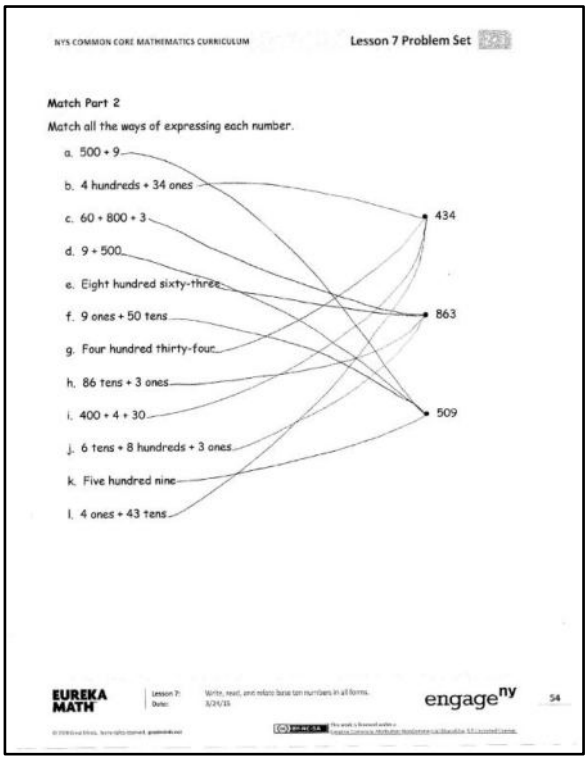
T: Compare 68 ones with 68 tens.

S: (Compare.)

Problem Set Part 2 (5 minutes)

Materials: (S) Problem Set Part 2 (pictured to the right)

Let those who are proficient work independently on the pictured Problem Set while a group stays for guided next questions. Notice that the examples of unit form now include addition. Let students make this connection. It should be well within their reach to make the jump.


NYS COMMON CORE MATHEMATICS CURRICULUM Lesson 7 Problem Set

Match Part 2

Match all the ways of expressing each number.

a. 500 + 9
b. 4 hundreds + 34 ones
c. 60 + 800 + 3
d. 9 + 500
e. Eight hundred sixty-three
f. 9 ones + 50 tens
g. Four hundred thirty-four
h. 86 tens + 3 ones
i. 400 + 4 + 30
j. 6 tens + 8 hundreds + 3 ones
k. Five hundred nine
l. 4 ones + 43 tens

434
863
509

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Application Problem (8 minutes)

Billy found a briefcase full of money. He counted up 23 ten-dollar bills, 2 hundred-dollar bills, and 4 one-dollar bills. How much money was in the briefcase?

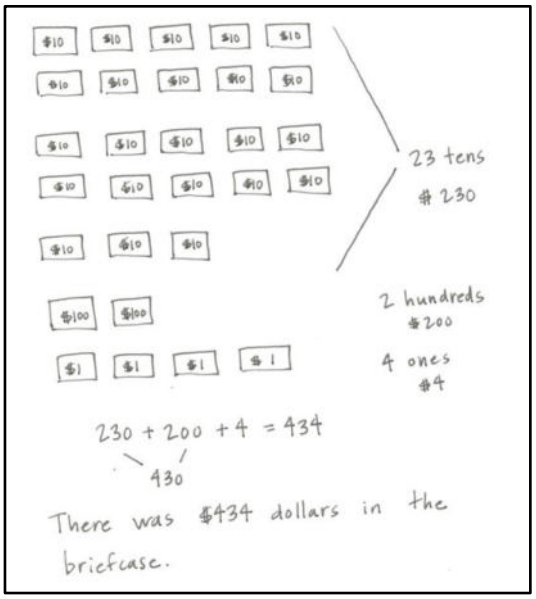
T: Let's read this problem together.

T: Work with your partner to solve this problem. (Allow time for students to solve.) Who would like to share how they solved the problem?

S: I drew all the money, then I counted it. 100, 200, 210, 220, 230, 240, 250, …, 430, 431, 432, 433, 434. I drew 23 circles to show 23 tens and counted up to 230 dollars. Then I skip-counted 200 more and got 430 dollars. Then I counted on 4 more dollars and got 434 dollars. I added 200 + 4. That's just expanded form.

While circulating, make organized notes on what individual students are sharing. This informal assessment provides valuable feedback, which can be shared during parent conferences. As students realize that they are being held accountable even for these small dialogues, their performance improves. The message is that *we are listening* and find their ideas interesting.

S: Then I drew 23 tens and I skip-counted 2 hundreds and 3 tens from 204 and got 434. I know 20 tens equals 200, so I counted on 2 more hundreds and got 400. Then I added the 3 tens from the 23 tens plus the 4 ones. 400 + 30 + 4 is 434. I know 23 tens is 2 hundreds 3 tens. Add 2 more hundreds. That is 4 hundreds 3 tens, plus 4 ones makes 434. He had $434.



T: How many dollars were in the briefcase?

S: 434 dollars were in the briefcase.

T: Tell me the number in unit form.

S: 4 hundreds, 3 tens, 4 ones.

T: What is the number in expanded form?

S: 400 + 30 + 4.

T: Add the unit form, the expanded form, and the statement to your paper.

Student Debrief (10 minutes)

Lesson Objective: Write, read, and relate base ten numbers in all forms.

Materials: (S) Problem Set, Application Problem solution

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 and the problem about Billy to our Debrief. Check your answers to the Problem Set with your partner for one minute. (Allow time for students to check.) I'll show the answers now. If you got the correct answer, say yes.

T: Problem A 234 matches to (write 234).

S: Yes!

T: Problem B 374 matches to (write 374).

S: Yes!

T: (Move through the rest of the problems quickly.) Take one minute to correct your mistakes.

T: Would anyone like to share a mistake?

S: I got J wrong.

T: Why?

S: Because I saw 123 really close by and didn't read the words.

T: You didn't read the units?

S: Yes.

T: Someone else?

S: I got F wrong for the same reason.

T: What reason is that?

S: I didn't read the units so I chose 374.

T: That's why it's so important to understand the units when we read numbers in **standard form**. We have to be precise or we make mistakes. The Mars Climate Orbiter disintegrated in 1999 due to the use of the wrong units. NASA lost millions of dollars! Always be precise about your units.

MP.6

T: Now, I want you to compare Problem Set Part 2 with the problem about Billy's money. Share with a partner.

S: Billy has money, but this problem is just hundreds, tens, and ones. Billy's ten-dollar bills are like the tens. The problems all have enough tens to make a hundred. Yeah, Billy has 23 ten-dollar bills. That means we can make 2 hundreds just like the problems that have 43 tens and 12 tens, so we can make a hundred. 12 tens is 1 hundred 2 tens just like 23 ten-dollar bills is 2 hundred-dollar bills and 3 ten-dollar bills. All the problems have more than 9 units of ten. That means we can make groups of 10 tens or hundreds.

T: So, when we write numbers in unit form, sometimes there are more than 9 of a unit. That means we can make a larger unit!

S: Yes!

T: Excellent.

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.

Name _____ Date _____

Spell Numbers: How many can you write correctly in 2 minutes?

1		11		10	
2		12		20	
3		13		30	
4		14		40	
5		15		50	
6		16		60	
7		17		70	
8		18		80	

Number Correct: _____

9		19		90	
10		20		100	

[1]

A

Expanded Form

1.	20 + 1 =	
2.	20 + 2 =	
3.	20 + 3 =	
4.	20 + 9 =	
5.	30 + 9 =	
6.	40 + 9 =	
7.	80 + 9 =	
8.	40 + 4 =	
9.	50 + 5 =	

23.	400 + 20 + 5 =	
24.	200 + 60 + 1 =	
25.	200 + 1 =	
26.	300 + 1 =	
27.	400 + 1 =	
28.	500 + 1 =	
29.	700 + 1 =	
30.	300 + 50 + 2 =	
31.	300 + 2 =	

[1] number spelling activity sheet

Number Correct: _____

Improvement: _____

10.	10 + 7 =	
11.	20 + 5 =	
12.	200 + 30 =	
13.	300 + 40 =	
14.	400 + 50 =	
15.	500 + 60 =	
16.	600 + 70 =	
17.	700 + 80 =	
18.	200 + 30 + 5 =	
19.	300 + 40 + 5 =	
20.	400 + 50 + 6 =	
21.	500 + 60 + 7 =	
22.	600 + 70 + 8 =	

32.	100 + 10 + 7 =	
33.	100 + 7 =	
34.	700 + 10 + 5 =	
35.	700 + 5 =	
36.	300 + 40 + 7 =	
37.	300 + 7 =	
38.	500 + 30 + 2 =	
39.	500 + 2 =	
40.	2 + 500 =	
41.	2 + 600 =	
42.	2 + 40 + 600 =	
43.	3+ 10 + 700 =	
44.	8 + 30 + 700 =	

B

Expanded Form

1.	10 + 1 =	

23.	500 + 30 + 6 =	

2.	10 + 2 =	
3.	10 + 3 =	
4.	10 + 9 =	
5.	20 + 9 =	
6.	30 + 9 =	
7.	70 + 9 =	
8.	30 + 3 =	
9.	40 + 4 =	
10.	80 + 7 =	
11.	90 + 5 =	
12.	100 + 20 =	
13.	200 + 30 =	
14.	300 + 40 =	
15.	400 + 50 =	
16.	500 + 60 =	
17.	600 + 70 =	

24.	300 + 70 + 1 =	
25.	300 + 1 =	
26.	400 + 1 =	
27.	500 + 1 =	
28.	600 + 1 =	
29.	900 + 1 =	
30.	400 + 60 + 3 =	
31.	400 + 3 =	
32.	100 + 10 + 5 =	
33.	100 + 5 =	
34.	800 + 10 + 5 =	
35.	800 + 5 =	
36.	200 + 30 + 7 =	
37.	200 + 7 =	
38.	600 + 40 + 2 =	
39.	600 + 2 =	

18.	300 + 40 + 5 =	
19.	400 + 50 + 6 =	
20.	500 + 60 + 7 =	
21.	600 + 70 + 8 =	
22.	700 + 80 + 9 =	

40.	2 + 600 =	
41.	3 + 600 =	
42.	3 + 40 + 600 =	
43.	5 + 10 + 800 =	
44.	9 + 20 + 700 =	

Name _____ Date _____

Match Part 1

Match the word form or unit form with standard form. Problem A is done for you as an example.

a. Two hundred thirty-four	• 204
b. Three hundred seventy-four	• 930
c. 7 hundreds 6 tens 3 ones	• 470
d. Two hundred four	• 763
e. Four hundred two	• 650
f. 3 ones 7 hundreds 4 tens	• 903

g. Four hundred seventy	• 123
h. 9 hundreds 3 ones	• 673
i. 3 ones 7 tens 6 hundreds	• 234
j. 1 ten 2 hundreds 3 ones	• 374
k. 5 tens 6 hundreds	• 402
l. Nine hundred thirty	• 743
m. 12 tens 3 ones	• 213

Match Part 2

Match all the ways of expressing each number.

a. 500 + 9

b. 4 hundreds + 34 ones

c. 60 + 800 + 3 • 434

d. 9 + 500

e. Eight hundred sixty-three

f. 9 ones + 50 tens • 863

g. Four hundred thirty-four

h. 86 tens + 3 ones

i. 400 + 4 + 30 • 509

j. 6 tens + 8 hundreds + 3 ones

k. Five hundred nine

l. 4 ones + 43 tens

Name _____ Date _____

1. Write 342 in word form.

_____

2. Write in standard form.

a. Two hundred twenty-six _____

b. Eight hundred three _____

c. 5 hundreds + 56 ones _____

d. 60 + 800 + 3 _____

3. Write the value of 17 tens three different ways. Use the largest unit possible.

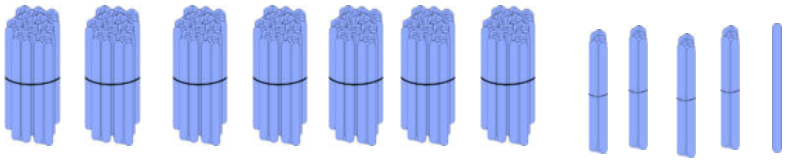
a. Standard form _____

b. Expanded form _____

c. Unit form _____

Name _____ Date _____

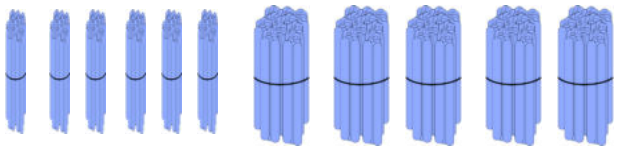
These are bundles of hundreds, tens, and ones. Write the standard form, expanded form, and word form for each number shown.

1. 

a. Standard Form _____

b. Expanded Form _____

c. Word Form _____

2. 

a. Standard Form _____

b. Expanded Form _____

c. Word Form _____

3. What is the unit value of the 3 in 432? _____

4. What is the unit value of the 6 in 216? _____

5. Write 212, 221, 122 in order from greatest to least.

_____ _____ _____