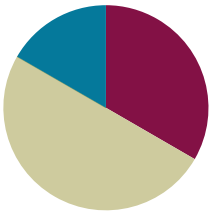
Lesson 6

Objective: Add and subtract within multiples of ten based on understanding place value and basic facts.

Suggested Lesson Structure

Fluency Practice	(20 minutes)
Concept Development	(30 minutes)
Student Debrief	(10 minutes)
Total Time	**(60 minutes)**



Fluency Practice (20 minutes)

- Say Ten Counting from 26 to 58 **2.NBT.1** (2 minutes)
- Take from 20 **2.OA.2** (4 minutes)
- Basic Facts are Tools **2.OA.2** (5 minutes)
- Adding Ones to Ones **2.OA.2** (9 minutes)

Say Ten Counting from 26 to 58 (2 minutes)

Materials: (T) Hide Zero cards, Rekenrek.

Note: Students need a clear understanding of the *structure of ten* to be able to add and subtract within multiples of ten.

T: (Show 22 with Hide Zero cards.) What is 2 more than 20, the regular way?
S: 22.
T: (Pull cards apart to show 20 + 2.) What is the Say Ten way to say 22?
S: 2 tens 2.
T: (Show 23.) What is the Say Ten way for 23?
S: 2 tens 3.
T: (Pull cards apart to show 20 + 3.) That's right!
T: Let's count the Say Ten way starting from 26 on the Rekenrek. As I move the beads, count aloud. What is the Say Ten way for 26?

NOTES ON MULTIPLE MEANS OF ACTION AND EXPRESSION:

During fluency practice, students recall and build upon their prior knowledge of place value and basic facts from Grade 1. Design math centers that include concrete representations for students (e.g., Rekenrek, ten-frames, linking cubes). Suggestions for centers ideas include the following:

- Rekenrek: Make ten, add/subtract across ten, build numbers 11–20, etc.
- Ten-Frames: Roll dice and build the number, ten-frame flash (add or take away 1), two more/less, double it, etc.
- Linking cubes: Build a tower with two colors that shows a given total, build towers to 10 and relate quantities with number sentences, build partner towers and tell how many more/less.

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S: 2 tens 6.

Show 26 with beads pulled to the left on the Rekenrek.

S: 2 tens 7, 2 tens 8, 2 tens 9, 3 tens, 3 tens 1, 3 tens 2.

Continue counting to 5 tens 8.

Take from 20 (4 minutes)

Materials: (S) Personal white boards

Note: The lesson relies on a student's ability to make ten and apply it to multiples of ten. This exercise will give students familiarity with the skill prior to the concept development.

T: I say one, you say nine—you take the number I say from 10. Then write the number sentence and wait for my signal to show it.

T: 7.

S: 3. (Students write number sentence.)

T: Show your personal white boards.

S: (Show 10 – 7 = 3.)

Continue with the following possible sequence: 8, 6, and 9.

T: This time instead of taking from 10, let's take from 20. Ready? 1.

S: 19. (Students write the number sentence.)

T: Show your personal white board.

S: (Show 20 – 1 = 19.)

Continue with the following possible sequence: 3, 2, 5, 0, 6, 8, 7, 9.

Basic Facts are Tools (5 minutes)

Materials: (T) Rekenrek

Note: This activity prepares students for the day's concept development by emphasizing the presence of the *basic fact*. The Rekenrek provides visual support, enabling students to see the structure of ten. For example, 8 + 3 is seen as 8 + 2 + 1.

T: Our basic fact, or tool, is 8 + 2. 8 + 2 is?

S: 10.

T: 8 + 3? (Show the numbers on the Rekenrek each time.)

S: 10 + 1.

T: 8 + 7 is?

S: 10 + 5. (Continue with possible sequence: 9 + 5, 9 + 4, 9 + 8.)

T: Our new basic fact, or tool, is 10 – 8. 10 – 8 is?

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S: 2.
T: 12 – 8 is? (Show the numbers on the Rekenrek each time.)
S: 2 + 2.
T: 15 – 8 is?
S: 2 + 5. (Continue with possible sequence: 12 – 9 and 15 – 9.)

Sprint: Adding Ones to Ones (9 minutes)

Materials: (S) Adding Ones to Ones Sprint

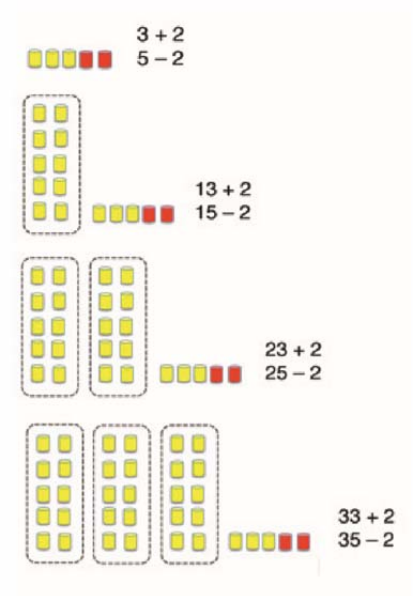
Note: The sprint applies prior knowledge of adding basic facts to larger numbers.

Concept Development (30 minutes)

Materials: (T) two-color counters, ten-frame cards for the number 10, set of ten-frame cards, linking cubes

Note: This activity focuses on adding and subtracting within a unit of 10 (e.g., 73 + 2, 75 – 2). Simple, basic facts such as 3 + 2 and 5 – 2 are helpful in solving problems with larger numbers. Students can use the say ten form of numbers (e.g., 13 is 1 ten 3, 26 is 2 tens 6,) to emphasize the presence of the basic fact. If the teacher asks a question the Say Ten way, the students should respond in kind.

T: (Show two-color counters.) 3 + 2 is?
S: 5.
T: 5 – 2 is?
S: 3.
T: (Lay down a ten-frame card.) 1 ten 3 + 2 is?
S: 1 ten 5.
T: 13 + 2 is?
S: 15.
T: 1 ten 5 – 2 is?
S: 1 ten 3.
T: 15 – 2 is?
S: 13.
T: (Lay down another ten-frame card.) 2 tens 3 + 2 is?
S: 2 tens 5.
T: 23 + 2 is?
S: 25.
T: Partner A, talk to your partner about how 3 + 2 helps you solve 23 + 2.
T: 2 tens 5 – 2 is?



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S: 2 tens 3.

T: 25 – 2 is?

S: 23.

T: Partner B, talk to your partner about how 5 – 2 helps you solve 25 – 2.

T: (Lay down another ten-frame card.) 3 tens 3 + 2 is?

In this next activity, students will use a portion of the Problem Set to look for and make use of structure.

T: (Pass out the Problem Set.)

T: Complete numbers 1 through 8 without writing number bonds. Just write the answers. If you finish early, write more sets of problems on the back.

S: (Students work.)

T: With your partner, look at the problems with 2 + 5 and 7 – 5.

T: Partner A, read your problems aloud to Partner B the Say Ten way. Then switch.

T: Listen closely to your words. Do you hear a pattern?

S: Yes!

T: What pattern do you hear when you are adding?

S: 2 + 5.

MP.7

T: What pattern do you hear when you subtract?

S: 7 – 5.

T: Explain to your partner what is different about your problems, both in addition and subtraction.

S: The first number is different. → The 10 is different. → The number of tens is different.

T: The basic fact you heard is the same, but the number of tens changes.

T: Circle the basic fact for each set of problems and label it. Then make bonds in each of your problems to break apart the ones from the number of tens.

S: (Students work.)

T: How does 7 – 5 help you solve 67 – 5? Talk to your partner.

T: (After students share out.) Let me hear you subtract without the basic fact by counting down. Ready?

S: 66, 65, 64, 63, 62. (Anticipate that students may start at 67 and not know when to stop.)

NOTES ON MULTIPLE MEANS OF REPRESENTATION:

In a healthy classroom culture, students may disagree with one another as they share their work. Disagreement encourages scrutiny and is an opportunity for students to learn and justify their choices. During partner talk, encourage students to justify arguments, and model and post good conversation starters: "I disagree because . . ." "Your solution is different from mine because . . ." "My error was . . ." "Your answer does not make sense to me because . . ." As you circulate, these starters should spark conversations within student partnerships.

Have students share with a partner about which strategy is easier to use, counting down or using the basic fact 7 – 5.

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T: Think of the different numbers of tens as towers of linking cubes of different sizes. No matter what size the tower is, the 2 + 5 doesn't change. (Model this concept pictorially or concretely with linking cubes or blocks.)

T: We can use *structures* and *patterns* to make math easier. Look for structure and patterns. Here's a structure (refer to the linking cube tower). The basic fact (refer to the model of 2 + 5) helps create a number pattern when we repeatedly use it.

Now, students look for and make use of structure to extend their work in the previous segment to completing a unit of 10 with addition, e.g., 37 + 3 = 40, 87 + 3, 83 + 7. As you move through the problems modeled below, be sure to record the number sentences sequentially for reflection at the end.

T: Present 10 counters (as shown to the right).

T: 7 + 3 is?

S: 10.

T: (Lay down a ten-frame card.) 10 + 7 + 3 is the same as?

S: 10 + 10.

T: 1 ten 7 + 3 is?

S: 2 tens.

T: 17 + 3 is? Give the addition sentence.

S: 17 + 3 = 20.

T: (Lay down a ten-frame card.) 20 + 7 + 3 is the same as?

S: 20 + 10.

T: 2 tens 7 + 3 is?

S: 3 tens.

T: 27 + 3 is? Give the addition sentence.

S: 27 + 3 = 30.

T: (Lay down a ten-frame card.) 30 + 7 + 3 is the same as?

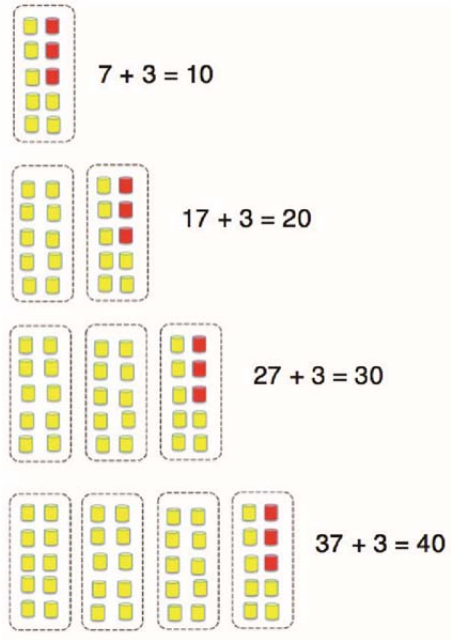
S: 30 + 10.

T: 3 tens 7 + 3 is?

S: 4 tens.

T: 37 + 3 is? Give the addition sentence.

S: 37 + 3 = 40.



T: Let's read each equation the Say Ten way.

S: 7 + 3 = 1 ten; 1 ten 7 + 3 = 2 tens; 2 tens 7 + 3 = 3 tens; 3 tens 7 + 3 = 4 tens.

T: What pattern is repeating?

S: 7 + 3.

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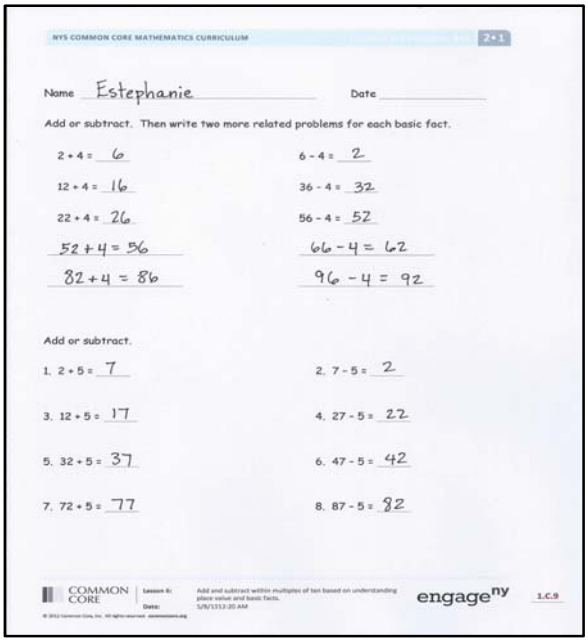
T: Let's think back to our new word *structure*. Talk to your partner about what structure 7 + 3 is standing on (point to 17 + 3 = 20). (Use this sentence frame: "7 + 3 is standing on the structure of _(1 ten) _.")

Repeat the process with each of the equations. Depending on the time, students can generate related equations.


NYS COMMON CORE MATHEMATICS CURRICULUM 2•1

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Add or subtract. Then write two more related problems for each basic fact.

2 + 4 = 6
12 + 4 = 16
22 + 4 = 26
52 + 4 = 56
82 + 4 = 86

6 - 4 = 2
36 - 4 = 32
56 - 4 = 52
66 - 4 = 62
96 - 4 = 92

Add or subtract.

1. 2 + 5 = 7
2. 7 - 5 = 2
3. 12 + 5 = 17
4. 27 - 5 = 22
5. 32 + 5 = 37
6. 47 - 5 = 42
7. 72 + 5 = 77
8. 87 - 5 = 82

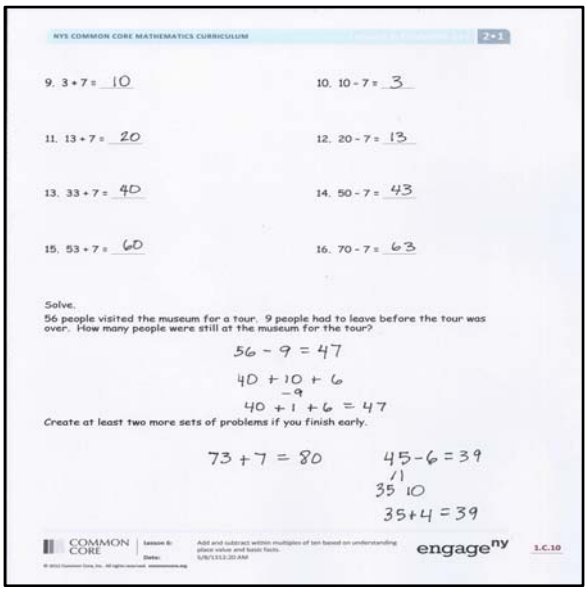
COMMON CORE engage^ny 1.C.9

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.

On this Problem Set, we suggest all students begin with Page 1 and then solve the word problem. Possibly leave 9–16 to the end if there is still time.

Student Debrief (10 minutes)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9. 3 + 7 = 10
10. 10 - 7 = 3
11. 13 + 7 = 20
12. 20 - 7 = 13
13. 33 + 7 = 40
14. 50 - 7 = 43
15. 53 + 7 = 60
16. 70 - 7 = 63

Solve.
56 people visited the museum for a tour. 9 people had to leave before the tour was over. How many people were still at the museum for the tour?

56 - 9 = 47
40 + 10 + 6
-9
40 + 1 + 6 = 47

Create at least two more sets of problems if you finish early.

73 + 7 = 80
45 - 6 = 39
35 10
35 + 4 = 39

COMMON CORE engage^ny 1.C.10

Lesson Objective: Add and subtract within multiples of ten based on understanding place value and basic facts.

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 the first section of the Problem Set. How does knowing 2 + 4 help you solve 12 + 4?
- How does solving the first column help you answer the second column?
- How do structures or patterns help make math easier?
- Talk to your partner about what you think our lesson's goal was today. Make an effort to include the word *structure* and a basic fact, using an example.

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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 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.

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Do as many as you can in 60 seconds.

1	10 and 2 make	16	33 + 1 =
2	31 and 1 make	17	42 + 1 =
3	44 and 2 make	18	31 + 4 =
4	23 and 2 make	19	40 + 3 =
5	22 and 3 make	20	24 + 3 =
6	41 and 3 make	21	36 + 2 =
7	21 and 2 make	22	33 + 3 =
8	14 and 1 make	23	36 + 4 =
9	23 and 3 make	24	40 + 1 =
10	44 and 3 make	25	45 + 2 =
11	22 and 4 make	26	44 + 4 =
12	30 and 1 make	27	32 + 1 =
13	42 and 2 make	28	33 + 2 =
14	45 and 2 make	29	43 + 4 =
15	31 and 7 make	30	25 + 2 =

Can you add on the ones to the ones?

Do as many as you can in 60 seconds.

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

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Name _____ Date _____

Add or subtract. Then write two more related problems for each basic fact.

2 + 4 = _____

12 + 4 = _____

22 + 4 = _____

_____

_____

6 – 4 = _____

36 – 4 = _____

56 – 4 = _____

_____

_____

Add or subtract.

1. 2 + 5 = _____
2. 7 – 5 = _____
3. 12 + 5 = _____
4. 27 – 5 = _____
5. 32 + 5 = _____
6. 47 – 5 = _____
7. 72 + 5 = _____
8. 87 – 5 = _____

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9. 3 + 7 = _____

10. 10 – 7 = _____

11. 13 + 7 = _____

12. 20 – 7 = _____

13. 33 + 7 = _____

14. 50 – 7 = _____

15. 53 + 7 = _____

16. 70 – 7 = _____

Solve.

56 people visited the museum for a tour. 9 people had to leave before the tour was over. How many people were still at the museum for the tour?

Create at least two more sets of problems if you finish early.

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Name _____ Date _____

Solve the problems. In the space provided, write a related problem for each of the basic facts.

4 + 2 =	6 – 4 =	1 + 9 =
24 + 2 =	36 – 4 =	11 + 9 =
84 + 2 =	76 – 4 =	61 + 9 =
_____	_____	_____

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Name _____ Date _____

Add or subtract. Then write two more related problems for each basic fact.

1. 6 + 2 = _____

   16 + 2 = _____

   26 + 2 = _____

2. 8 – 6 = _____

   28 – 6 = _____

   38 – 6 = _____

3. 4 + 3 = _____

   44 + 3 = _____

   74 + 3 = _____

4. 7 – 3 = _____

   57 – 3 = _____

   77 – 3 = _____

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5. 5 + 2 = _____

35 + 2 = _____

75 + 2 = _____

6. 7 – 2 = _____

57 – 2 = _____

67 – 2 = _____

Solve the following 4 problems. Show your number bonds. Draw if that will help you.

1. 20 – 6 = _____

2. 30 – 5 = _____

3. 49 – 6 = _____

4. 69 – 6 = _____

Solve.

79 people attended the concert. 6 people had to leave at the break. How many people were still at the concert after the break?

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