

Foundations for Addition and Subtraction within 10

Lesson by Great Minds, as featured on EngageNY,
annotation by Student Achievement Partners

GRADE LEVEL Second

IN THE STANDARDS 2.OA.A.1, 2.OA.B.2, (K.OA.A.3, K.OA.A.4, K.NBT.A.1, 1.OA.C.6)

WHAT WE LIKE ABOUT THIS SET OF LESSONS




Mathematically:

- Begins the journey towards fluency with sums and differences within 20 (2.OA.B.2)
- Sets up fluency foundations/routines with content from prior grades (1.OA.C.6, K.OA.A.4)
- Makes connections between application (2.OA.A.1) and procedural skill/fluency (2.OA.B.2)
- Lesson connects addition and subtraction and treats them together as related ideas
- Relates concrete quantities and abstract symbols (MP.2)

In the classroom:

- Uses multiple concrete representations and visual models to make the mathematics explicit
- Can lead into related discussions (sums beyond 10)
- Prompts students to share their developing thinking and understanding (Student Debrief and throughout lessons)
- Provides opportunities and suggestions for differentiation
- Gives formal and informal opportunities for teachers to check for understanding

MAKING THE SHIFTS¹

	Focus	Belongs to the major work ² of second grade
	Coherence	Builds upon first grade work with addition (1.OA.C.6) to set students up for meeting the expectations of 2.OA.A.1 and 2.OA.B.2
	Rigor ³	Conceptual Understanding: secondary in these lessons Procedural Skill and Fluency: primary in these lessons (2.OA.B.2) Application: primary in these lessons (2.OA.A.1)

¹For more information read [Shifts for Mathematics](#).

²For more information, see [Focus in Grade Two](#).

³Lessons may target one or more aspect(s) of rigor.

ADDITIONAL THOUGHTS

It's important to note that these sample lessons are the first in an 8-lesson unit called [Sums and Differences to 20](#). It is not intended for students to meet the full expectations of the grade-level standards addressed in these lessons through only these two selected lessons. These sample lessons lay a strong foundation for the work that is to come in second grade.

This set of second grade lessons explicitly addresses the content from kindergarten and first grade. These particular lessons deliberately build on these concepts and relate them to the major work of second grade. Criterion 5 of the [K–8 Publishers' Criteria](#) states that instructional materials should relate grade-level concepts explicitly to prior knowledge from earlier grades. In addition, it suggests that review and unfinished learning be addressed inside grade-level work, as opposed to setting aside the important work of the grade to reteach earlier content. These lessons are a good example of how this can be done. For more information, see pages 12 and 13 of the [K–8 Publishers' Criteria](#).

The structure of these lessons and the unit/curriculum overall have some interesting aspects to highlight. The units make explicit the coherence within the fully developed curriculum. Each topic (a set of lessons) is connected to prior learning and also points to the next lesson that follows in the learning progression. Within individual lessons, there are a number of components that add to their strength including daily fluency practice, variety in questioning techniques, and daily opportunities for students to debrief about their learning.

This lesson was also highlighted as an exemplar by the EQuIP Jury. See [here](#) for more information on that process and to see the reviews.



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Sums and Differences to 20

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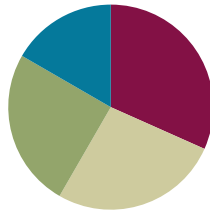
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Lesson 1

Objective: Make number bonds of ten.

Suggested Lesson Structure

■ Fluency Practice	(19 minutes)
■ Concept Development	(16 minutes)
■ Application Problems	(15 minutes)
■ Student Debrief	(10 minutes)
Total Time	(60 minutes)



Fluency Practice (19 minutes)

- Happy Counting 1–10 **2.NBT.2** (2 minutes)
- Break 10 in 2 Parts **2.OA.2** (5 minutes)
- Add Tens and Some Ones **2.OA.2** (12 minutes)

Happy Counting 1–10 (2 minutes)

Note: On the first day, counting up and down to 10 simply alerts students to the fun and challenge of changing direction and establishing a protocol that will quickly advance to larger numbers as the module unfolds.

Make your hand motions emphatic so the students' counting is sharp and crisp. Once students get the hang of it, make the counting more challenging by skip-counting or starting at higher numbers. Also, it's *Happy Counting*, not *Happy Mouth*, so resist the urge to mouth the answers. Students need to do the work, so they have to watch your fingers!

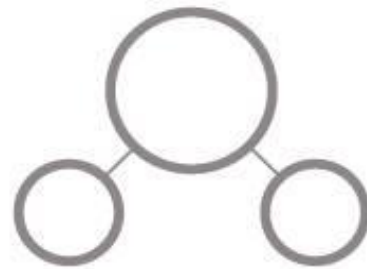
- T: We're going to play a game called Happy Counting!
- T: Watch my hand to know whether to count up or down. A closed hand means stop. (Show signals as you explain.)
- T: Let's count by ones, starting at zero. Ready? (Teacher rhythmically points up until a change is desired. Show a closed hand then point down. Continue, mixing it up.)
- S: 0, 1, 2, 3, (stop), 2, 1, 0, (stop), 1, 2, 3, 4, 5, (stop), 4, 3, 2, 1, 0, (stop), 1, 2, 3, 4, 5, 6, 7, (stop), 6, 5, 4, (stop), 5, 6, 7, 8, 9, 10, (stop), 9, 8, 7, 6.
- T: Excellent! Try it for 30 seconds with your partner. Partner A, you are the teacher today.

Break 10 in 2 Parts (5 minutes)

Materials: (S) One stick of ten linking cubes with a color change after the fifth cube

Note: There is almost no foundational skill more important than fluency with the bonds of numbers within 10. By starting at the concrete level, students quickly re-engage with their hopefully hard-wired knowledge of their bonds of 10. The color change also orients them to the five.

- T: Now let's play Break 10 in 2 Parts
- T: Show me your 10 stick. (Students show.) Hide it behind your back.
- T: I will say the size of one part. Break that part off in one piece. Then without peeking, see if you know how many are in the other part.
- T: Ready?
- S: Yes!
- T: Break off 2. No peeking. At the signal, tell how many are in the other part. (Give signal.)
- S: 8!
- T: Show your parts and see if you are correct.
- S: It's 8!
- T: What parts are you holding?
- S: 2 and 8.
- T: What's the whole?
- S: 10.



Continue with the following possible sequences: 3 and 7, 1 and 9, 4 and 6, 5 and 5. Show the bond (as pictured to the right) and continue with the remaining bonds at an ever-quicken pace.

- T: Turn and talk to your partner about how this game is the same or different than one you played in first grade.
- T: How did knowing that help you play today?
- T: Tell your partner which pattern or strategy helped you to find the missing part when you couldn't peek at how many were left.

Sprint: Add Tens and Some Ones (12 minutes)

Materials: (S) Add Tens and Some Ones Sprint

Note: This particular choice brings automaticity back with the Ten Plus sums, foundational for the *make a ten* strategy and expanded form.



**NOTES ON
MULTIPLE MEANS OF
ACTION AND
EXPRESSION:**

For sprints, a fast pace is essential and builds energy and excitement. To support students who don't excel under pressure, you may give them the chance to practice the sprint at home the night before it is administered.

To maintain a high level of energy and enthusiasm, always do a stretch or a movement game in between Sprint A and Sprint B. For example, do jumping jacks while skip-counting by fives.

Directions for Administration of Sprints

One sprint has two parts with closely related problems on each. The problems on each part move from simple to complex, creating a challenge for every learner. Before the lesson, cut the sprint sheet in half to create Sprint A and Sprint B. Students complete the two parts of the sprint in quick succession with the goal of improving on the second part, even if only by one more. With practice the following routine takes about 8 minutes.

Sprint A

(Put Sprint A face down on desks with instructions to not look at problems until the signal is given.)

- T: You will have 60 seconds to do as many problems as you can.
- T: I do not expect you to finish all of them. Just do as many as you can, your personal best.
- T: Take your mark! Get set! THINK! (When you say THINK, students turn papers over and work furiously to finish as many problems as they can in 60 seconds. Time precisely.)

(After 60 seconds:)

- T: Stop! Circle the last problem you did. I will read just the answers. If you got it right, call out “Yes!” and give a fist pump. If you made a mistake, circle it. Ready?

(Repeat to the end of Sprint A or until no one has any more correct.)

- T: Now write your correct number at the top of the page. This is your personal goal for Sprint B.
- T: How many of you got 1 right? (All hands should go up.)
- T: Keep your hand up until I say a number that is 1 more than the number you got right. So, if you got 14 right, when I say 15 your hand goes down. Ready?
- T: (Quickly.) How many got 2 right? And 3, 4, 5, etc. (Continue until all hands are down.)

(Optional routine, depending on whether or not the class needs more practice with Sprint A.)

- T: Take one minute to do more problems on this half of the sprint.

(As students work, you might have the person who scored highest on Sprint A pass out Sprint B.)

- T: Stop! I will read just answers. If you got it right, call out “Yes!” and give a fist pump. If you made a mistake, circle it. Ready? (Read the answers to the first half again.)

Note: To keep the energy and fun going, do a stretch or a movement game in between sprints.

Sprint B

(Put Sprint B face down on desks with instructions to not look at the problems until the signal is given. Repeat the procedure for Sprint A up through the show of hands for how many right.)

- T: Stand up if you got more correct on the second sprint than on the first.
- S: (Students stand.)
- T: Keep standing until I say the number that tells how many more you got right on Sprint B. If you got 3 more right on Sprint B than on Sprint A, when I say 3 you sit down. Ready?

(Call out numbers starting with 1. Students sit as the number by which they improved is called.)

An alternate method is to choose three students to tell how many they got correct on Sprint A and Sprint B.

For each set of scores, on your signal, the class chorally says the difference. This provides frequent practice with counting on and other mental strategies, and it reinforces the relationship between addition and subtraction.

- T: Miguel, how many did you get correct on Sprint A and Sprint B?
- S: On Sprint A, I got 12, and on Sprint B I got 17.
- T: How many more did Miguel do on Sprint B than on Sprint A? (Pause.)
- S: (Students respond chorally.) 5!

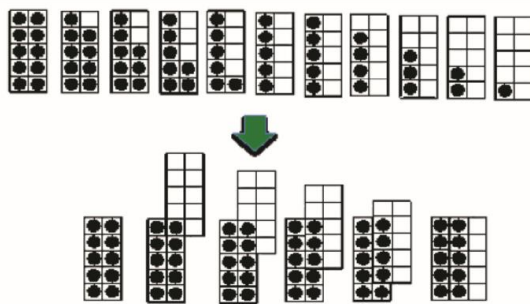
Students may take sprints home.

Concept Development (16 minutes)

Materials: (T) Large set of ten-frame cards in the following suggested order: 5, 9, 1, 8, 2, 7, 3, 6, 4, 5, 10
 (S) Personal white boards, deck of eleven ten-frame cards that show the numbers 1–10, with an extra card that shows 5 (see image below)

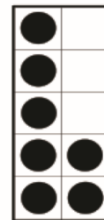
Note: This activity provides visual support as it invites students to remember the number bonds of 10.

- T: Place your ten-frame cards in order from largest to smallest.
- T: Move your ten-frames that have 5 or fewer dots to make ten (see model).
- S: (Students move cards, placing the 1 on the 9, etc.)
- T: Now go through your bonds of 10 out loud: (10 and 0, 9 and 1, 8 and 2, 7 and 3, etc.)
- T: Close your eyes and see if you can remember them without looking.
- T: Open your eyes and do it again. Who got better at their number bonds of 10?



Note: This next activity requires students to visualize (for those who still need support) or recall from memory (for those who achieved mastery of partners to 10) the missing addend. It also refreshes their subitizing skills, as students only have a few seconds to recognize the set of 5 and the set of 2 on the image below as 7, in order to complete the number sentence.

- T: Here is a ten-frame card. Tell me the addition sentence to make ten. Wait for the signal. (Flash a ten-frame dot card for about two seconds.)
- S: $7 + 3 = 10$, $5 + 5 = 10$, $9 + 1 = 10$, $8 + 2 = 10$, etc.
- T: This time, tell me the subtraction sentence to get to the number of dots shown.



Wait for the signal. (Flash a ten-frame dot card for about two seconds.)

S: $10 - 7 = 3$, $10 - 5 = 5$, $10 - 9 = 1$, $10 - 1 = 9$, etc.

T: Partner A: Turn over your ten-frame cards to hide the dots.

1. Show the top card for two seconds.
2. Wait for your partner to tell you the addition sentence and subtraction sentence.
3. Flash the next card.
4. Keep going until the buzzer sounds after one minute.

T: (Set the timer for one minute.) Partner B, do the same.

T: Let's try the class set again. (Repeat the class set. Give verbal praise specific to observed improvement, "Students, you really improved at making 10 from 2, 3, and 4, which have always been a greater challenge.")

T: Partners, talk about how $6 + 4$ helps you solve $10 - 6$.

Call out one number for students to show with their fingers. They show the missing part and say the number sentence.

T: Four.

S: (Students show 4 fingers. Then they show 6.) $4 + 6 = 10$.

T: (Continue quickly through the remaining partners to 10.)

For three minutes, students write number bonds of 10 on personal boards or blank paper without pictures or manipulatives. If they get stuck, invite them to visualize ten-frame cards rather than use them. Close by having partners share their work and look for commonalities. (Template included.)

Once having generated the pairs independently in writing, briefly continue forward into teen numbers with addition, numbers to 40, and numbers to 100 as students are able. This adds excitement as students see their sums applying to bigger numbers. Keep a lively pace.

T: $5 + 5$ is?

S: 10.

T: $15 + 5$ is?

S: 20!

T: $25 + 5$ is?

T: 30!

T: $65 + 5$ is?

S: 70.

MP.2

Repeat the process as time allows, possibly using the following sequence: $7 + 3$, $17 + 3$, $27 + 3$, $57 + 3$; $8 + 2$, $28 + 2$, and $48 + 2$.



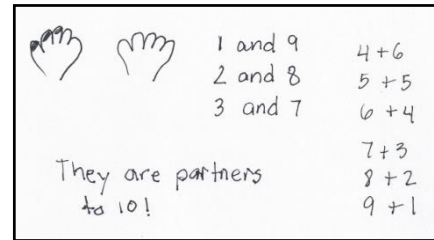
NOTES ON MULTIPLE MEANS OF REPRESENTATION:

Post the first few problems of each set on the board, so students can identify the pattern. Underline, highlight, or use a different color for the digits in the ones place to draw attention to making a ten.

Application Problems (15 minutes)

Problem 1

Mrs. Potter paints her fingernails one at a time from left to right. If she paints 1 fingernail, how many fingernails will she have unpainted? How many other combinations of painted and unpainted nails can she have?



Problem 2

The cashier puts exactly 10 bills inside each envelope. How many more bills does he need to put in each of the following envelopes?

- An envelope with 9 bills. (1)
- An envelope with 5 bills. (5)
- An envelope with 1 bill. (9)
- Find other numbers of bills that might be in an envelope and tell how many more bills the cashier needs to put to make 10 bills.

A different cashier puts exactly 30 bills in each envelope. How many more bills does he need to put in each of the following envelopes?

- An envelope with 28 bills. (2)
- An envelope with 22 bills. (8)
- An envelope with 24 bills. (6)

Note: Choose one or both problems based on the needs of your students and the time constraint of 15 minutes. These problems are designed to elicit connections between the fingernails, envelopes, and ten-frames, which can be explored during the Debrief. 15 minutes have been allotted in order for you to review the Read, Draw, Write (RDW) Process for problem-solving.

Directions on the RDW Process: Read the problem, draw and label, write a number sentence, and write a word sentence. The more students participate in reasoning through problems with a systematic approach, the more they internalize those behaviors and thought processes.

(Excerpted from “How to Implement *A Story of Units*.”)

Problem Set

Students should do their personal best to complete the Problem Set within the allotted 10 minutes. Some problems do not specify a method for solving. This is an intentional reduction of scaffolding that invokes MP.5, Use Appropriate Tools Strategically. Students should solve these problems using the RDW approach used for Application Problems.

For some classes, it may be appropriate to modify the assignment by specifying which problems students should work on first. With this option, let the careful sequencing of the problem set guide your selections so that problems continue to scaffold. Balance word problems with other problem types to ensure a range of practice. Assign incomplete problems for homework or at another time during the day.

Student Debrief (10 minutes)

Lesson Objective: Make number bonds of ten.

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.

- Compare the envelope problem to the fingernail problem. What is different about the problems? What is the same about them?
- (Hold up a ten-frame card). Why do you think I chose to use the ten-frame cards today?
- (Hold up the ten-stick of linking cubes with the color change after the fifth cube.) How does the color change at the five help us with learning our bonds of ten?
- Instead of a color change, how does the ten-frame show the five?
- How did the first envelope problem help you solve the second one? How does $6 + 4$ help you to solve $26 + 4$?

NYS COMMON CORE MATHEMATICS CURRICULUM Lesson 1: Problem Set 2•1

Name Jessica Date _____

1. Add or subtract. Complete the number bond for each set.

$3 + 7 = 10$ $9 + 1 = 10$
 $7 + 3 = 10$ $1 + 9 = 10$
 $10 - 7 = 3$ $10 - 1 = 9$
 $10 - 3 = 7$ $10 - 9 = 1$

2. Circle all the number sentences that are true.

$0 + 10 = 10$ $6 + 3 = 10$
 $5 + 5 = 10$ $9 + 1 = 10$
 $2 + 9 = 10$ $6 + 4 = 10$
 $3 + 7 = 10$ $1 + 10 = 10$

3. Fill in the missing numbers.

$4 + \underline{6} = 10$
 $10 - 6 = \underline{4}$
 $10 = \underline{4} + 6$
 $\underline{6} = 10 - 4$

COMMON CORE Lesson 1: Make number bonds of ten. Date: 5/7/13 engage^{ny} 1.A.10

NYS COMMON CORE MATHEMATICS CURRICULUM Lesson 1: Problem Set 2•1

4. Complete the number bonds.

5. Jim had \$6 in the bank. He found some money on a park bench and put it in the bank. He now has \$10 in the bank. How much money did he find?

$6 + \square = 10$
 $\$4$

6. Natasha was given some money for her birthday. She spent \$7 on a bow and \$3 on a hair clip. If she used all of her money, how much money was Natasha given? Solve using words, math drawings, or numbers.

$7 + 3 = 10$
 Natasha was given \$10.

COMMON CORE Lesson 1: Make number bonds of ten. Date: 5/7/13 engage^{ny} 1.A.11

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.

Do as many as you can in 60 seconds.

Do as many as you can in 60 seconds.

1	$10 + 1 =$	16	10 and 1 make _____	1	$10 + 3 =$	16	10 and 3 make _____
2	$10 + 2 =$	17	2 more than 10 is ____	2	$10 + 4 =$	17	4 more than 10 is ____
3	$10 + 4 =$	18	10 and 0 make _____	3	$10 + 1 =$	18	10 and 4 make _____
4	$10 + 3 =$	19	10 and 3 make _____	4	$10 + 2 =$	19	10 and 2 make _____
5	$10 + 5 =$	20	10 and 6 make _____	5	$10 + 3 =$	20	10 and 1 make _____
6	$10 + 6 =$	21	1 more than 10 is ____	6	$10 + 4 =$	21	3 more than 10 is ____
7	$10 + 0 =$	22	10 and 4 make _____	7	$10 + 1 =$	22	10 and 4 make _____
8	$10 + 7 =$	23	10 and 5 make _____	8	$10 + 2 =$	23	10 and 2 make _____
9	$10 + 9 =$	24	10 and 9 make _____	9	$10 + 3 =$	24	10 and 8 make _____
10	$10 + 10 =$	25	10 and 6 make _____	10	$10 + 4 =$	25	7 more than 10 is ____
11	$10 + 1 =$	26	6 more than 10 is ____	11	$10 + 1 =$	26	10 and 9 make _____
12	$10 + 3 =$	27	10 and 10 make _____	12	$10 + 2 =$	27	10 and 0 make _____
13	$10 + 4 =$	28	3 more than 10 is ____	13	$10 + 3 =$	28	3 more than 10 is ____
14	$10 + 2 =$	29	10 and 2 make _____	14	$10 + 1 =$	29	10 and 2 make _____
15	$10 + 3 =$	30	2 more than 10 is ____	15	$10 + 2 =$	30	5 more than 10 is ____

Do you know your 10 pluses?

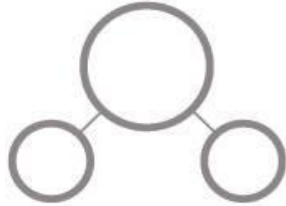
Robin Ramos 2005

Name _____

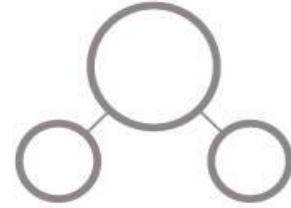
Date _____

1. Add or subtract. Complete the number bond for each set.

$3 + 7 = \underline{\quad}$



$9 + 1 = \underline{\quad}$



$7 + 3 = \underline{\quad}$

$1 + 9 = \underline{\quad}$

$10 - 7 = \underline{\quad}$

$10 - 1 = \underline{\quad}$

$10 - 3 = \underline{\quad}$

$10 - 9 = \underline{\quad}$

2. Circle all the number sentences that are true.

$0 + 10 = 10$

$6 + 3 = 10$

$5 + 5 = 10$

$9 + 1 = 10$

$2 + 9 = 10$

$6 + 4 = 10$

$3 + 7 = 10$

$1 + 10 = 10$

3. Fill in the missing numbers.

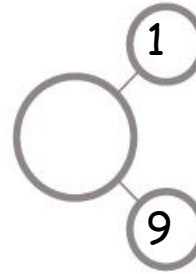
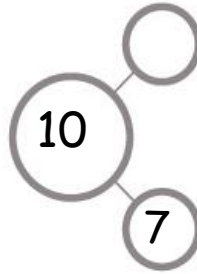
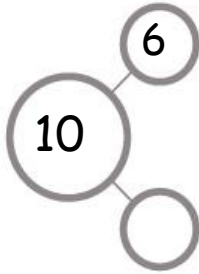
$4 + \underline{\quad} = 10$

$10 - 6 = \underline{\quad}$

$10 = \underline{\quad} + 6$

$\underline{\quad} = 10 - 4$

4. Complete the number bonds.

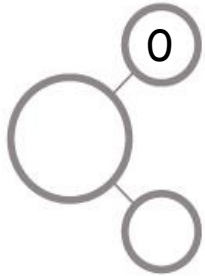


5. Jim had \$6 in the bank. He found some money on a park bench and put it the bank. He now has \$10 in the bank. How much money did he find?
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Name _____

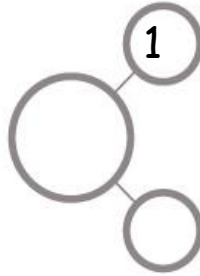
Date _____

Complete each number bond to make 10. Write at least one addition and one subtraction sentence to accompany each bond.



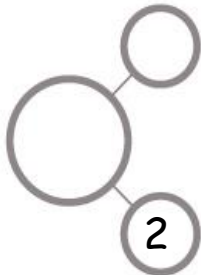
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$$\underline{\quad} - \underline{\quad} = \underline{\quad}$$



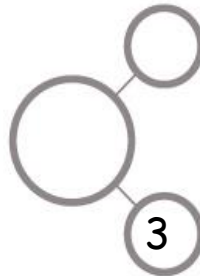
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$$\underline{\quad} + \underline{\quad} = \underline{\quad}$$

$$\underline{\quad} - \underline{\quad} = \underline{\quad}$$



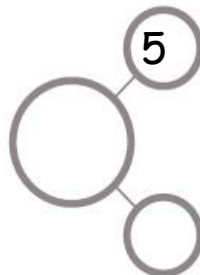
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$$\underline{\quad} + \underline{\quad} = \underline{\quad}$$

$$\underline{\quad} - \underline{\quad} = \underline{\quad}$$



$$\underline{\quad} + \underline{\quad} = \underline{\quad}$$

$$\underline{\quad} - \underline{\quad} = \underline{\quad}$$

Name _____

Date _____

1. Circle all number sentences that are true.

$6 + 4 = 10$

$5 + 5 = 1 + 9$

$10 = 3 + 7$

$2 + 8 = 7 + 3$

$10 - 7 = 4$

$8 - 2 = 10$

2. Add or Subtract.

$10 - 7 = \underline{\quad}$

$8 + 2 = \underline{\quad}$

$10 - 5 = \underline{\quad}$

$3 + 7 = \underline{\quad}$

$10 - 0 = \underline{\quad}$

3. Solve the problems.

$1 + 9 =$

$59 + 1 =$

$15 + 5 =$

$65 + 5 =$

$28 + 2 =$

$72 + 8 =$

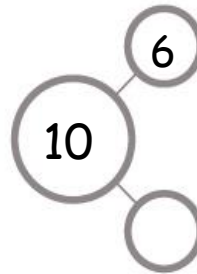
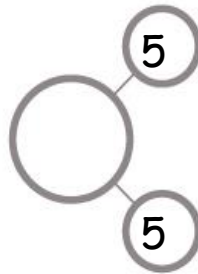
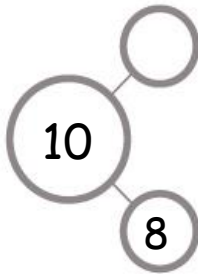
$33 + 7 =$

$87 + 3 =$

$46 + 4 =$

$94 + 6 =$

4. Complete the number bonds.

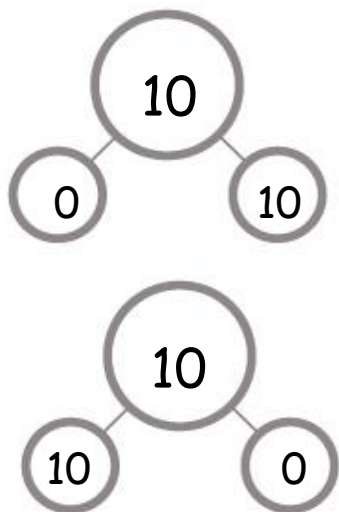


5. Your little brother has \$4 and wants to spend the money on an action figure that costs \$10. How much money does he still need to buy the action figure?
6. Daniel found \$14. His father gave him some more. Then he had \$20. How much money was he given? Write a number sentence to show your thinking.
7. Amy read 24 books. Peter read 30 books. Amy wants to read as many books as Peter. Amy thinks she needs to read 7 more books to reach her goal. Is she right? Explain using words, math drawings, or numbers.

Name _____

Date _____

Draw all the number bonds of 10. The first one is done for you.

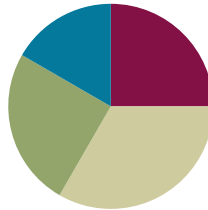


Lesson 2

Objective: Make number bonds through ten with a subtraction focus and apply to one-step word problems.

Suggested Lesson Structure

■ Fluency Practice	(15 minutes)
■ Concept Development	(20 minutes)
■ Application Problems	(15 minutes)
■ Student Debrief	(10 minutes)
Total Time	(60 minutes)



Fluency Practice (15 minutes)

- Happy Counting 9–25 **2.NBT.2** (2 minutes)
- Say Ten Counting from 5 to 25 **2.NBT.1** (6 minutes)
- Ten Plus Number Sentences **2.OA.2** (3 minutes)
- Make Ten by Identifying the Missing Part **2.OA.2** (4 minutes)

Happy Counting 9–25 (2 minutes)

Note: Students practice fluently crossing the ten on day 2, meaning they work up and down especially focusing on 8, 9, 10, 11, 12, 11, 10, 9, 8 and 18, 19, 20, 21, 22, 21, 20, 19, 18.

- T: We're going to play a game called Happy Counting!
- T: Watch my hand to know whether to count up or down. A closed hand means stop. (Show signals as you explain.)
- T: Let's count by ones, starting at zero. Ready? (Rhythmically point up until a change is desired. Show a closed hand then point down. Continue, mixing it up.)
- S: 9, 10, 11, 12, 13, 14 (stop) 13, 12, 11 (stop) 12, 13, 14, 15, 16, 17, 18 (stop) 17, 16, 15, 14 (stop) 15, 16, 17, 18, 19, 20 (stop) 19, 18, 17 (stop) 18, 19, 20, 21, 22, 23 (stop) 22, 21, 20, 19 (stop) 20, 21, 22, 23, 24, 25.
- T: Excellent! Try it for 30 seconds with your partner. Partner B, you are the teacher today.

Say Ten Counting from 5 to 25 (6 minutes)

Note: Research substantiates that unit form counting, or counting the Say Ten way, supports number sense in that the naming of the numbers reveals the base ten to students. Students have been counting this way since kindergarten.

Hide Zero cards and the Rekenrek (both pictured below) beautifully parallel Say Ten counting.

- T: The Say Ten way to say 11 is 1 ten 1. (Pull the cards apart to show the 10 and the 1.) In Say Ten counting, we first state the number of tens and then state the number of ones.
- T: (Show 12 with place value cards.) 2 more than 10, not in Say Ten way?
- S: 12
- T: (Pull cards apart.) The Say Ten way is to say 12?
- S: 1 ten 2
- T: (Show 13.) What is the Say Ten way for 13?
- S: 1 ten 3
- T: (Pull cards apart.) Yes!
- T: Let's count the Say Ten way, starting from 5 on the Rekenrek. As I move the beads, count aloud.



Beads on the Rekenrek start out pushed to the right. To show 5, a row of 5 are pulled to the left. To show 1 ten 1, a row of ten and a second row of one are pulled to the left, etc.

- S: 5, 6, 7, 8, 9, 10, 1 ten 1, 1 ten 2, 1 ten 3, 1 ten 4, 1 ten 5, 1 ten 6, 1 ten 7, 1 ten 8, 1 ten 9.
- T: 2 tens (show two rows of ten beads pulled to the left), and the pattern begins again.
- S: 2 tens 1, 2 tens 2, 2 tens 3, 2 tens 4, 2 tens 5.
- T: Partner B, tell your partner what patterns you noticed as you counted numbers 11–19.
- T: Talk with your partner about how Say Ten counting numbers 11–19 relates to counting numbers 20–29.

Ten Plus Number Sentences (3 minutes)

Materials: (T) Ten-frame cards, Hide Zero cards

Note: Students should be able to claim proficiency with their *ten plus* facts. “My ten-plus facts are easy! I just know them. $10 + 9$ is 19. See I didn’t have to count.” Clearly this then extends into knowing $20 + 9$ and later understanding expanded form without difficulty.

- T: I will flash two ten-frame cards, ten and another card. Wait for the signal. Then tell me the addition sentence that combines the numbers. Let’s say numbers the regular way.
- T: (Flash 10 and 5.)
- S: $10 + 5 = 15$.

Continue with the following possible sequence: 10 and 9, 10 and 1, 10 and 3.

- T: Let’s use Hide Zero cards for larger numbers. (Flash 30 and 5.)

Continue with the following possible sequence: 30 and 8, 70 and 8, 70 and 7

- T: Talk to your partner about $10 + 8 = 18$, $30 + 8 = 38$ and $70 + 8 = 78$. (Write these facts on the board.) What is the same about these facts? What is different?
- T: Partner A, explain how one problem helps you solve the other.
- T: Partner B, explain how Say Ten counting is like *ten plus* number sentences.

Make Ten by Identifying the Missing Part (4 minutes)

Materials: (S) Personal white boards

Note: Students need this skill as they add 8 and 6 using the ten and subsequently add 18 and 6 or 80 and 60.

- T: If I say 9, you say 1 because 9 needs 1 to be 10.
- T: Wait for the signal, 5.
- S: 5.

Continue with the following possible sequence: 8, 2, 9, 1.

- T: This time I'll say a number and you write the addition sentence to make ten on your personal white board.
- T: 0. Get ready. Show me your board.
- S: $0 + 10 = 10$.
- T: 10. Get ready. Show me your board.
- S: $10 + 0 = 10$.

Continue with the following possible sequence: 3, 7, 6, 4.

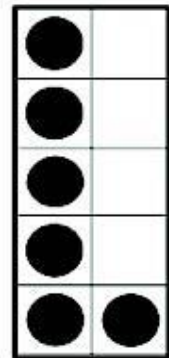
- T: Turn and explain to your partner what pattern you noticed that helped you solve the problems.
- S: First you said 0 and the answer was $0 + 10 = 10$; next you said 10 and the answer was $10 + 0 = 10$. The numbers switched places!

Concept Development (20 minutes)

Materials: (T) Set of ten-frame cards (S) Per pair of students: set of ten-frame cards, ten two-sided counters, a blank ten-frame, a die, a hiding paper, personal white boards

Note: This lesson builds on the previous lesson as students reestablish their Grade 1 mastery of sums and differences to 10. The focus is on subtraction facts since, in general, students are proficient in addition but often mistakenly write $2 - 7 = 5$, for example, rather than $7 - 2 = 5$.

- T: Look at the card I'm holding up. (Hold up a ten-frame with 6 dots.)
- T: How many dots do you see?
- S: 6.
- T: In your mind, subtract 1. At the signal tell me the subtraction sentence. Wait for my signal.



- S: $6 - 1 = 5$.
- T: Good. Let's keep going. As you look at the 6 card, subtract the number I tell you. Wait for the signal. 5. (Signal.)
- S: $6 - 5 = 1$.
- T: Nice work! (Keep going, subtracting 2, 4, 3, and 0 before advancing to the 7 card with a similar sequence.)
- T: (Hold up a ten-frame with 7 dots.) Now how many dots do you see?
- S: 7.
- T: (Continue through the bonds of 7.)
- T: Now, you practice in pairs using the 8 and 9 cards to quiz each other. Partner A, you start with the 8 card. When I say to switch, Partner B will start quizzing partner A with the 9 card.
- T: (Pass out materials for the following activity: ten two-sided counters, a blank ten-frame, a die, a blank piece of paper to hide the counters.)
- T: I will tell you the whole amount. Partner B shows the whole using counters on the ten-frame.
- T: If I say that the whole is 7, Partner B shows one color of 7 counters on the ten-frame.
- T: Now Partner A, roll the die to determine the part to change color. What part did you roll?
- S: 4.
- T: Hiding all the counters from Partner A, Partner B flips 4 counters to the other color.
- T: Partner A, say the subtraction sentence to find the part that didn't change color.
- S: $7 - 4 = 3$. The part that didn't change color is 3!
- T: Partner B, show the counters to prove whether Partner A is correct or incorrect.
- T: Continue playing for 30 seconds. I will then say switch. Exchange materials. As I watch and listen to you work and improve, I will pass you on to the next larger number when you are ready. (Move students on to wholes of 8, 9, 10 and beyond.)

Note: Conduct a short debriefing to give students time to reflect and share insights.

- T: There are some problems that you may do more slowly than others. Which ones slow you down?
- S: Subtracting 6 from 9 is hard for me.
- T: Who can share a way they subtract 6 from 9 with the class?



NOTES ON MULTIPLE MEANS OF ENGAGEMENT:

Choose one or both application problems based on the needs of your students and the time constraint of 15 minutes.

Take care that the connection between the concept development and the application problems is not made too explicit; the goal is for students to discover these connections: "Oh! This is just *ten plus* number sentences!" "I can use what I practiced in *make 10* to do the apples problem!" Ask questions to probe what students mean and encourage them to articulate their observations, especially during the Debrief when you want the lesson's objective to become eminently clear to the students.

- S: My fives are easy for me. $9 - 5$ is 4 so $9 - 6$ is one less, 3. \rightarrow I think, 6 plus what is 9? I know that is 3. \rightarrow I know my tens. $10 - 6$ is 4 so $9 - 6$ is one less. \rightarrow I know my number pairs. 6 and 3 is 9 so $9 - 6$ is 3.
- T: Partner B, turn and talk to your partner about one strategy you just heard and understood that is different from the one you used. (Pause.) Partner A, take a turn.

Application Problems (15 minutes)

Problem 1

There are both red and green apples in a bag. (Select a total number of apples as appropriate for your students. Be sure your students are proficient with 7, 8, and 9 before choosing a larger number.) How many red and how many green apples might there be in the bag?

Problem 2

Sherry already has 10 stickers. Now her goal is to collect 20 in all. She got 4 more on Monday and 4 again on Tuesday.

- How many does she have in all?
- How many more does she need to make her goal?
- How many does she need if her goal is to collect 30 stickers?

Note: Problem 1 relates to the fingernail problem from the previous day’s lesson. Instruct students to use the RDW procedure (introduced in Lesson 1) and their personal white boards to complete Problem 1. Problem 2 is more challenging, and the goal is for students to do their best within the allotted time (time-frame), not to complete all tasks (task-frame). The two problems create a differentiation opportunity. Those students who grasp the concept can move on, while those who need more practice can work on Problem 1.

Handwritten student work on a whiteboard:

○○○○○ ○○○○○ ○○○○ ○○○○
10 stickers 4 more 4 more

a. $10 + 4 + 4 = 18$ Sherry had 18 stickers in all.
 8

b. $18 + 2 = 20$ She needs 2 more stickers.

c. $18 + \underline{2} = 20$ She needs 12 more stickers.
 $20 + \underline{10} = 30$

Guide students through the problem by rereading it and then drawing and labeling each piece of information as it is given. (Be sure students write the equation and the statement of the answer for each part as it is solved on their personal white boards.) This systematic approach will support students as they work independently on the Problem Set and at home.

- T: Let’s read Problem 2 together through Part (a).
- S: (Students read chorally.)
- T: Tell your partner what you see when you hear the story.
- S: (Students share with partners.)
- T: What can you draw to show Part (a)?

NOTES ON MULTIPLE MEANS OF ACTION AND EXPRESSION:

As you circulate during this Application lesson segment, identify a student who uses an efficient representation or strategy. Ask the student to share her work with the class during the Student Debrief. Select work that advances efficient ways of counting and grouping rather than work that shows scattered representations.

- S: A page with 10 stickers, and then another page that's getting fuller because she got stickers on Monday and stickers on Tuesday. → 10 stickers and 8 more.
- T: I'll give you two minutes to make your drawing of the story.
- T: Explain to your partner what your drawing shows.
- T: (Wait until a brief exchange is complete.) How many stickers does Sherry have now?
- S: 18.
- T: 18 what? It's important to always state the unit.
- S: 18 stickers.
- T: Turn and tell your partner what number sentence you can write to show your drawing.

At this point continue through the process of having the students write the equation and the statement of the answer.

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: Make number bonds through ten with a subtraction focus and apply to one-step word problems.

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.

NYS COMMON CORE MATHEMATICS CURRICULUM 2•1

Name Andy Date _____

1. Complete the number bonds

2. Find the unknown numbers that make the number sentences true.

9 - 5 = 4 8 - 5 = 3
 3 + 5 = 8 3 + 4 = 7
 8 - 4 = 4 6 - 3 = 3
 18 = 8 + 10 17 = 7 + 10
9 - 5 = 4 9 - 6 = 3

3. Maria put some cups on the table. Jesse put 7 more. There were 17 cups in all. How many cups did Maria put on the table? Show your thinking using words, math drawings, or numbers.

17 - 7 = 10 because 7 + 10 = 17

COMMON CORE Lesson 2: Make number bonds through ten with a subtraction focus and apply to one-step word problems. engage^{ny} 1.A.8
 Date: 5/7/13

NYS COMMON CORE MATHEMATICS CURRICULUM 2•1

4. Fill in the missing numbers:

11 is 10 and 1 13 is 10 and 3
 15 is 10 and 5 10 and 9 is 19
 10 and 8 is 18 12 is 10 and 2

5. Your older sister says, "3 + 10 is easy". You can hear the answer when you count the Say Ten way. Use the ten-frame cards to show why this strategy works for 10 + 7 = 17.

6. Maggie had a bag of marbles. There were 5 yellow marbles, 6 white marbles and 4 blue marbles. How many marbles were there in all? Show your thinking using words, math drawings, or a number sentence.

5 + 6 + 4 = 15
10 + 5 = 15

COMMON CORE Lesson 2: Make number bonds through ten with a subtraction focus and apply to one-step word problems. engage^{ny} 1.A.9
 Date: 5/7/13

- You've worked hard to solve the sticker problem so now let's look at our work together.
- What did you see?
- Do you agree? Turn and talk to you partner about why you agree or disagree?
- Look at the first and second columns of Problem 2. What connections do you see between the problems in each row?
- In Problem 6, which numbers did you add first? Why?

Exit Ticket (3 minutes)

After the Student Debrief, instruct students to complete the Exit Ticket. A quick review of their work will help you assess the students' understanding of the concepts that were presented in the lesson today. Students have three minutes to complete the Exit Ticket. You may read the questions aloud to the students.



NOTES ON USING MP.3 IN A STUDENT DEBRIEF:

In transitioning from the Application Problems to the Student Debrief, anticipate your students needing one minute to organize their materials and find their pre-assigned math partner to come to the rug.

As students organize themselves, quickly project or redraw the student sample you selected, as well as your own solution on the board.

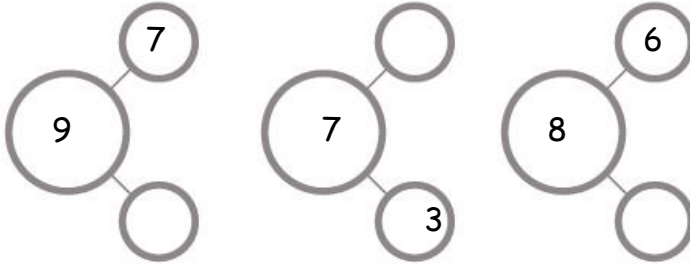
Once students have gathered, wait for 100% attention before beginning. Signal the beginning of the Debrief with a welcoming statement as modeled to the left.

The simple question, "What do you see?" is non-threatening and remarkably effective for eliciting a range of observations and insights that get the conversation started by meeting students where they are. These insights then lead to the opportunity to construct viable arguments and critique the reasoning of others.

Name _____

Date _____

1. Complete the number bonds



2. Find the unknown numbers that make the number sentences true.

$9 - 5 = \underline{\quad}$

$8 - 5 = \underline{\quad}$

$3 + \underline{\quad} = 8$

$3 + \underline{\quad} = 7$

$8 - \underline{\quad} = 4$

$6 - \underline{\quad} = 3$

$18 = \underline{\quad} + 10$

$17 = 7 + \underline{\quad}$

$\underline{\quad} - 5 = 4$

$\underline{\quad} - 6 = 3$

3. Maria put some cups on the table. Jesse put 7 more. There were 17 cups in all. How many cups did Maria put on the table? Show your thinking using words, math drawings, or numbers.

4. Fill in the missing numbers:

11 is _____ and 1

13 is _____ and 3

15 is 10 and _____

10 and _____ is 19

10 and 8 is _____

12 is 10 and _____

5. Your older sister says, "3 + 10 is easy". You can hear the answer when you count the Say Ten way. Use the ten-frame cards to show why this strategy works for $10 + 7 = 17$.

6. Maggie had a bag of marbles. There were 5 yellow marbles, 6 white marbles and 4 blue marbles. How many marbles were there in all? Show your thinking using words, math drawings, or a number sentence.

Name _____

Date _____

1. $7 - 4 = \underline{\quad}$

2. $2 + \underline{\quad} = 8$

3. $6 = 9 - \underline{\quad}$

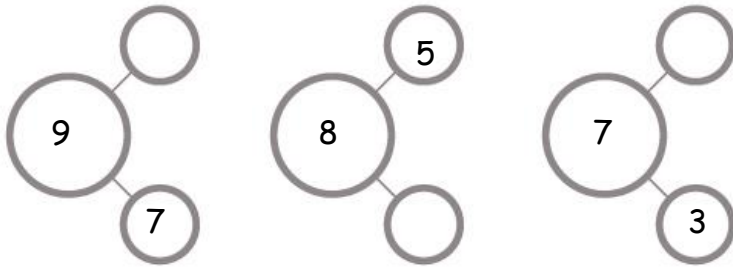
4. Mr. Gardener has a box with 12 tomatoes. He gives 2 tomatoes to his sister and another 7 tomatoes to his neighbor. How many tomatoes does he have left? Show your work with a picture and number sentence.

Mr. Gardener has tomatoes.

Name _____

Date _____

1. Complete the number bonds



2. Find the unknown numbers that make the number sentences true.

$7 - 5 = \underline{\quad}$

$9 - 5 = \underline{\quad}$

$4 + \underline{\quad} = 8$

$10 = 7 + \underline{\quad}$

$8 - \underline{\quad} = 3$

$7 - \underline{\quad} = 3$

$17 = \underline{\quad} + 10$

$6 = 5 + \underline{\quad}$

$\underline{\quad} - 5 = 3$

$\underline{\quad} - 6 = 3$

3. Fill in the missing numbers

$\underline{\quad} = 8 + 10$

$\underline{\quad} = 7 - 2$

$\underline{\quad} = 10 - 5$

$\underline{\quad} = 10 + 4$

$\underline{\quad} = 10 + 9$

$\underline{\quad} = 3 + 6$

4. Fill in the missing numbers.

16 is _____ and 6.

11 is 10 and _____

18 is _____ and 10

10 and 7 is _____

15 is _____ ten _____ ones.

10 and _____ is 19

5. Mr. Avakian put a stack of 10 paper plates on the table for a party. He also put 8 big plates of food. How many plates were there in all on the table? Show your thinking using words, math drawings, or a number sentence.

6. Mr. Passerini handed out 10 vanilla, 2 chocolate, and 8 strawberry ice cream cones. How many ice cream cones did she hand out in all? Show your thinking using words, math drawings, or a number sentence.