Topic B

Initiating Fluency with Addition and

Subtraction Within 100

**2.OA.1, 2.OA.2, 2.NBT.5,** 1.NBT.4, 1.NBT.5, 1.NBT.6

Focus Standards:	2.OA.1	Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.
	2.OA.2	Fluently add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers.
	2.NBT.5	Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.
Instructional Days:	6	
Coherence -Links from:	G1–M2	Introduction to Place Value Through Addition and Subtraction Within 20
	G1–M4	Place Value, Comparison, Addition and Subtraction to 40

-Links to:	G1–M6	Place Value, Comparison, Addition and Subtraction to 100
	G2–M4	Addition and Subtraction Within 200 with Word Problems to 100
	G3–M2	Place Value and Problem Solving with Units of Measure

Now that students have sharpened their skills, they are ready to solve problems by decomposing and composing units. Lessons 3, 4, 5, and 7 revisit Grade 1 learning at a new pace and without a heavy reliance upon concrete and pictorial models while simultaneously preparing students for the new learning of Lessons 6 and 8, subtracting single-digit numbers from two-digit numbers within 100.

In Lesson 3, students use their understanding of place value to add and subtract like units, by decomposing addends into tens and ones. For example, students apply their knowledge that $7 - 2 = 5$ to solve $47 - 2$ (7 ones – 2 ones = 5 ones) and $73 - 20$ (7 tens – 2 tens = 5 tens).
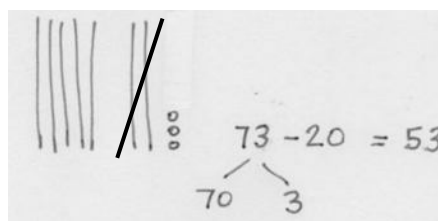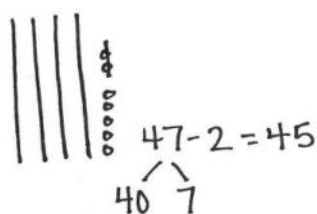
In Lesson 4, students use the Grade 1 make ten strategy. For example, to add 9 + 4 (pictured to the right), students decompose 4 as 1 and 3 in order to complete a unit of ten (9 + 1) and then add, or compose, the ten with the remaining ones (10 + 3). They then apply the same understanding to make the *next* ten (pictured below) in Lesson 5.

$$9 + 4 = \boxed{13}$$
$$\overset{1 \quad 3}{\diagup \diagdown}$$
$$9 + 1 = 10$$
$$10 + 3 = 13$$

$$39 + 4 = \boxed{43}$$
$$\overset{1 \quad 3}{\diagup \diagdown}$$
$$39 + 1 = 40$$
$$40 + 3 = 43$$

In Lesson 6, students   advance their Grade 1 take from ten strategy to subtract single-digit numbers from multiples of 10. For example, 30 − 9 is solved by decomposing 30 as 20 and 10, taking from ten (10 − 9), and composing the parts that are left (20 + 1).
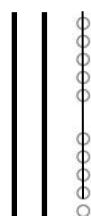
Just subtract 9 from 10.
$$10 - 9 = 1$$

30 − 9 = 21
/ \
20 10
10 − 9 = 1
20 + 1= 21

In Lesson 7, students practice the Grade 1 take from ten strategy within 20. Students repeat the same reasoning from Lesson 6. For example, 11 − 9 is solved by decomposing 11 as 1 and 10, taking from ten (10 − 9), and composing the parts that are left (1 + 1).

11 − 9 = 2
/ \
1   10
10 − 9 = 1
1 + 1 = 2

Just subtract 10 − 9 = 1.
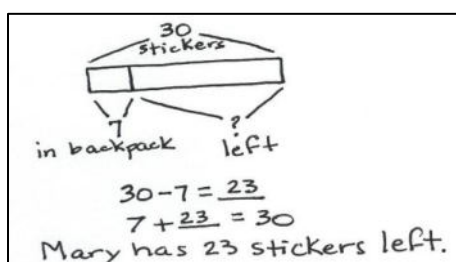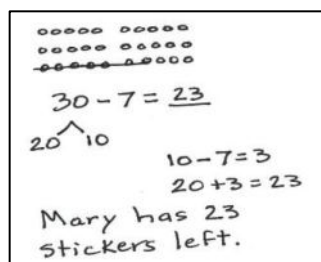Then add the parts
that are left. 1 + 1 = 2

Topic B culminates with Lesson 8, where students, as in Lesson 6, extend the take from ten strategy to numbers within 100 (**2.NBT.5**). For example, to solve 41 – 9, students decompose 41 as 31 and 10, take from ten (10 – 9), and add the parts that are left (31 + 1). Notice how the student talking to the right has now generalized the process from the specific problem.

$41 - 9 = 32$

$31 \quad 10$

$10 - 9 = 1$

$31 + 1 = 32$

Just subtract from the ten and then put together the parts that are left!
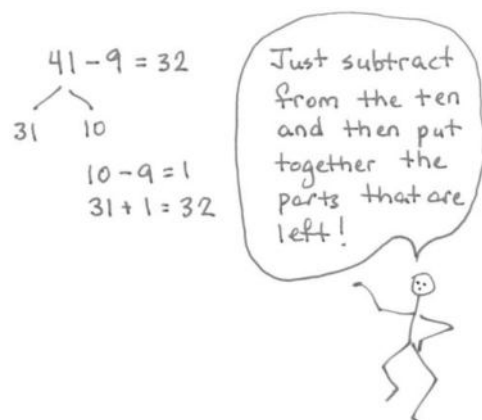
Making a ten and taking from ten are strategies that lay the foundation for understanding place value and the base ten system. These Level 3 composition and decomposition methods powerfully pave the way for composing units and decomposing units of ten and a hundred when using the addition and subtraction algorithms in Modules 4 and 5. Furthermore, they exemplify Mathematical Practice 8, as students look for the opportunity to repeat patterns of reasoning both when calculating and in the context of word problems.

In Topic B, Application Problems contextualize learning as students apply strategies to problem solving using the RDW process. Students solve *add to, take from, put together/take apart* problem types with unknowns in different positions (**2.OA.1**). They demonstrate their understanding of the situation by representing it with a drawing, number sentence, and statement.

Mary buys 30 stickers. She puts 7 in her friend's backpack. How many stickers does Mary have left?

ooooo ooooo
ooooo ooooo
ooooo ooooo

$30 - 7 = \underline{23}$

$20 \quad 10$

$10 - 7 = 3$
$20 + 3 = 23$

Mary has 23 stickers left.

30 stickers

7 in backpack   ? left

$30 - 7 = \underline{23}$
$7 + \underline{23} = 30$

Mary has 23 stickers left.

Many students will enter Grade 2 drawing simple circles or 5-groups to reason through and represent a given situation. Encourage sense making, and accept all reasonable drawings. Drawing a tape diagram to accurately represent story situations comes with time and practice.

A Teaching Sequence Toward Mastery of Initiating Fluency with Addition and Subtraction Within 100
Objective 1: **Add and subtract like units.** **(Lesson 3)**
Objective 2: **Make a ten to add within 20.** **(Lesson 4)**
Objective 3: **Make a ten to add within 100.** **(Lesson 5)**
Objective 4: **Subtract single-digit numbers from multiples of 10 within 100.** **(Lesson 6)**
Objective 5: **Take from ten within 20.** **(Lesson 7)**
Objective 6: **Take from ten within 100.** **(Lesson 8)**

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