Topic D

Strategies for Composing Tens and Hundreds

2.BT.6, 2.NBT.7, 2.NBT.8, 2.NBT.9

Focus Standards:	2.NBT.6	Add up to four two-digit numbers using strategies based on place value and properties of operations.
	2.NBT.7	Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.
	2.NBT.8	Mentally add 10 or 100 to a given number 100–900, and mentally subtract 10 or 100 from a given number 100–900.
	2.NBT.9	Explain why addition and subtraction strategies work, using place value and the properties of operations. (Explanations may be supported by drawings or objects.)
Instructional Days:	6	
Coherence -Links from:	G1–M4	Place Value, Comparison, Addition and Subtraction to 40
-Links to:	G2–M5	Addition and Subtraction Within 1,000 with Word Problems to 100.
	G3–M2	Place Value and Problem Solving with Units of Measure

In Lesson 17 of Topic D, students extend the base ten understanding developed in Topic A to numbers within 200. Having worked with manipulatives to compose 10 ones as 1 ten, students relate this to composing 10 tens as 1 hundred. For example, students might solve 50 + 80 by thinking 5 ones + 8 ones = 13 ones, so 5 tens + 8 tens = 13 tens = 130. They use place value language to explain where they make a new hundred. They also relate 100 more from Module 3 to + 100 and mentally add 100 to given numbers.

In Lesson 18, students use place value disks on a place value chart to represent addition with the composition of 1 ten and 1 hundred. They use place value language to explain where they make a new ten and a new hundred, as well as where to show each new unit on the place value chart. In Lesson 19, students relate manipulatives to the vertical form, recording compositions as new groups below. As they did in Topic B, students use place value language to express the action as they physically make 1 ten with 10 ones disks and 1 hundred with 10 tens disks. Working as partners, one student records each change on the vertical form step by step as the other partner moves the manipulatives.

In Lessons 20 and 21, students move from concrete to pictorial as they use math drawings to represent compositions of 1 ten and 1 hundred. Some students may need the continued support of place value drawings with labeled disks, while others use the chip model. In both cases, students relate their drawings to the vertical form, recording each change they make to their model on the numerical representation. They use place value language to explain these changes.

Lesson 22 focuses on adding up to four two-digit addends with totals within 200. Students now have multiple strategies for composing and decomposing numbers, and they use properties of operations (i.e., the associative property) to add numbers in an order that is easiest to compute. For example, when solving 24 + 36 + 55, when adding the ones, a student may make a ten first with 4 and 6. Another student may decompose the 6 to make 3 fives (by adding 1 to the 4).

A Teaching Sequence Toward Mastery of Strategies for Composing Tens and Hundreds
Objective 1: Use mental strategies to relate compositions of 10 tens as 1 hundred to 10 ones as 1 ten. **(Lesson 17)**
Objective 2: Use manipulatives to represent additions with two compositions. **(Lesson 18)**
Objective 3: Relate manipulative representations to a written method. **(Lesson 19)**
Objective 4: Use math drawings to represent additions with up to two compositions and relate drawings to a written method. **(Lessons 20–21)**
Objective 5: Solve additions with up to four addends with totals within 200 with and without two compositions of larger units. **(Lesson 22)**