



Topic C

Strategies for Solving *Change* or *Addend Unknown* Problems

1.OA.1, 1.OA.3, 1.OA.4, 1.OA.6, 1.OA.5, 1.OA.7, 1.OA.8

Focus Standard:	1.OA.1	Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.	
	1.OA.3	Apply properties of operations as strategies to add and subtract. (Students need not use formal terms for these properties.) <i>Examples: If $8 + 3 = 11$ is known, then $3 + 8 = 11$ is also known. (Commutative property of addition.) To add $2 + 6 + 4$, the second two numbers can be added to make a ten, so $2 + 6 + 4 = 2 + 10 = 12$. (Associative property of addition.)</i>	
	1.OA.4	Understand subtraction as an unknown-addend problem. <i>For example, subtract $10 - 8$ by finding the number that makes 10 when added to 8.</i>	
	1.OA.6	Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use mental strategies such as counting on; making ten (e.g., $8 + 6 = 8 + 2 + 4 = 10 + 4 = 14$); decomposing a number leading to a ten (e.g., $13 - 4 = 13 - 3 - 1 = 10 - 1 = 9$); using the relationship between addition and subtraction (e.g., knowing that $8 + 4 = 12$, one knows $12 - 8 = 4$); and creating equivalent but easier or known sums (e.g., adding $6 + 7$ by creating the known equivalent $6 + 6 + 1 = 12 + 1 = 13$).	
Instructional Days:	4		
Coherence	-Links from:	GK–M4	Number Pairs, Addition and Subtraction to 10
	-Links to:	G2–M3	Place Value, Counting, and Comparison of Numbers to 1000
		G2–M5	Addition and Subtraction Within 1000 with Word Problems to 100

Topic C provides students with practice solving *add to with change unknown*, *take from with change unknown*, *put together with addend unknown*, and *take apart with addend unknown* word problems (1.OA.1). Drawing on the momentum gained from Topic B, Lesson 22 allows students to attack *put together/take apart with addend unknown* word problems such as, “Maria has 15 baseballs, 8 of them are old, and some of them are brand new birthday presents. How many brand new baseballs does Maria have?” Students solve these problems using both the Level 2 counting on strategy and Level 3 subtraction strategies (1.OA.4).

Lesson 23 allows students to use counting on as it relates to subtraction, take from ten strategies, or the get

to ten Level 3 strategy, as they solve *add to with change unknown* problems (1.OA.6). The get to ten strategy has students solving $12 - 3$ as $12 - 2 - 1$, understanding that decomposing the subtrahend to easily get to the ten yields a simpler, more manageable subtraction problem. It is the way a student can make ten when there is an unknown addend. It is a step away from counting on, where, rather than counting on by ones, students consider how much it takes to get to ten and then add on the rest to the teen number. For many students, the language of get to ten helps them bridge from counting on to a more efficient strategy. Up to this point, make ten for the students has shown both addends, and they are strategic about which number to break apart so that they can bond two numbers to make ten. This is a different, though related, process.

Lesson 24 presents students with *take from with change unknown* problems where they continue to select various strategies for solving. Students again relate various addition strategies to their recently acquired subtraction strategies, but in this new word problem type, the strategies they select and discuss help them better make sense of these problems. Students begin to recognize that although stories may be *take from with change unknown* problems, they can apply many strategies such as counting on, counting back, taking from ten, or getting to ten to accurately solve this challenging problem type.

Topic C closes with Lesson 25, where students move away from the context of story problems, to find matching expressions to create true number sentences. They work solely with equations to show and talk about how they would re-represent a given addition or subtraction problem using a Level 2 or Level 3 strategy. For example, when given $9 + 6$, students decompose the 6 into 1 and 5, and then can add using their new number sentence $10 + 5$, (i.e., $9 + 6 = 10 + 5$) (1.OA.7), using pictures and words.

A Teaching Sequence Towards Mastery of Strategies for Solving *Change or Addend Unknown* Problems

Objective 1: Solve *put together/take apart with addend unknown* word problems and relate counting on to the take from ten strategy.
(Lesson 22)

Objective 2: Solve *add to with change unknown* problems, relating varied addition and subtraction strategies.
(Lesson 23)

Objective 3: Strategize to solve *take from with change unknown* problems.
(Lesson 24)

Objective 4 Strategize and apply understanding of the equal sign to solve equivalent expressions.
(Lesson 25)