# Mathematics Curriculum

Topic E
Varied Problem Types Within 20

1.OA.1

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. (See CCLS Glossary, Table 1.)
Instructional Days:	4	
Coherence -Links from:	G1–M2	Introduction to Place Value Through Addition and Subtraction Within 20
-Links to:	G1–M6	Place Value, Comparison, Addition and Subtraction to 100
	G2–M4	Addition and Subtraction Within 200 with Word Problems to 100

As students begin working with larger numbers in word problems, representing each item and drawing it individually can become cumbersome. In previous work with problem types, the two parts have been almost exclusively single-digit numbers. For example, students were adding 9 and 6 or subtracting 8 from 14 to solve.

During Topic E, students begin to represent quantities in larger groupings while still visualizing the relationship between the numbers. For example, students may be adding a two-digit number and a one-digit number, such as 12 and 4, or subtracting a two-digit number from a two-digit number, such as 16 – 12, represented in the tape diagram to the right.
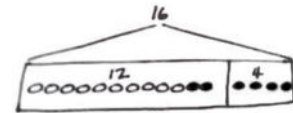
Tape Diagram

In Lesson 19, students are presented with *put together/take apart with total unknown* and *add to with result unknown* word problems within 20 (**1.OA.1**). As they solve, they draw and box the two parts and then include the numeral label within the box, producing tape diagrams. This enables them to quickly identify where the quantity can be found within the drawing. Students begin adding a bracket as shown to identify the total.

Lessons 20 and 21 allow students to explore number relationships as they solve *put together/take apart with addend unknown* and *add to with change unknown* word problems within 20. As they do so, they explore number relationships as they notice and discuss how the size of the boxes relate to the size of each part. For example, when adding 12 + 4, students notice that the part in their tape diagram that contains 12 is much longer than the part that contains 4. They also notice that, when adding 10 + 10, the two parts are the same size.

During these lessons, students share their strategies for drawing when a part is unknown. For example, to solve the problem, "Maria has 15 playing cards in her hand. She has 8 black cards. If the rest are red, how many red cards does she have?" Some students may draw all 15 cards first, and then place a box around the

8 black cards Maria already has. Other students may draw the 8 black cards, and then count on as they draw to 15. Still other students may label 15 for the total, draw one part labeled 8, and then work toward identifying the missing part. Students continue to work on recognizing what kind of unknown they are looking for—a part or a total.

During Lesson 22, students use their experiences and understanding to write their own word problems of varied types based on given tape diagrams.

While the addition and subtraction within the problems for Topic E are within 20, fluency work continues to support students' skill and understanding from Topics A through D using numbers to 40. This fluency work prepares them for the increased complexity of addition in the final topic—Topic F.

A Teaching Sequence Toward Mastery of Varied Problem Types Within 20

Objective 1:   Use tape diagrams as representations to solve *put together/take apart with total unknown* and *add to with result unknown* word problems.
(Lesson 19)

Objective 2:   Recognize and make use of part–whole relationships within tape diagrams when solving a variety of problem types.
(Lessons 20–21)

Objective 3:   Write word problems of varied types.
(Lesson 22)