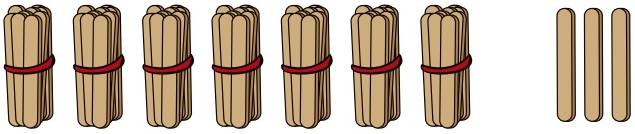
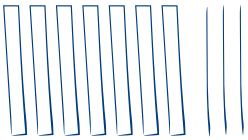
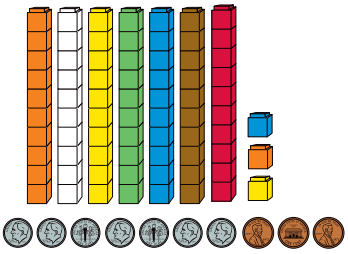
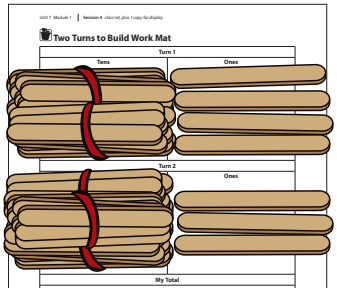
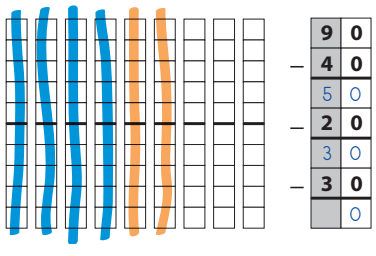
Bridges in Mathematics Grade 1

Unit 7: One Hundred & Beyond

In this unit your child will:

- Understand place value within the range of 0–120
- Represent numbers using groups of 1s, 10s, and 100
- Use models, sketches, and numbers to add and subtract up to 120
- Count forward and backward by 1s, 2s, 5s, and 10s on a number line

Your child will practice these skills by solving problems like those shown below.

PROBLEM	COMMENTS
Build the number 73 with bundles & sticks.  *"10, 20, 30, 40, 50, 60, 70… 71, 72, 73. I used 7 bundles of 10 and 3 sticks."* Make a sketch of your sticks. *"I drew a rectangle for each bundle and a line for each stick."* 	Place value refers to our base ten number system. The value of each digit in a number depends on its place: ones, tens, or hundreds. Using models strategically grouped into 10s and 1s (like the bundles & sticks shown at left) emphasizes the connection between the quantity and symbol. 
Build two numbers with bundles & sticks. Add the numbers together to get the total number of sticks. *"I counted the 10s first—10, 20, 30, 40, 50—and got 50. Then I counted the 1s —1, 2, 3, 4, 5, 6, 7—that makes 57!"* 	Base ten models like those shown encourage students to split numbers by place value and add tens to tens, and ones to ones. In the example at left, the student used the bundles of 10 sticks and single sticks to represent the numbers 24 and 33. Next, the bundles of 10 were added together and then the single sticks were added separately, resulting in two partial sums that were combined to get the total. This strategy of "splitting" 10s and 1s helps students understand the structure of numbers in our base ten system and furthers their understanding of place value.
Color the ten-strips to see how much is left. Fill in the numbers on the strip. *"I drew a blue line through 4 ten-strips to subtract 40."*  90 − 40 50 − 20 30 − 30 0	In the game Race to Zero, students subtract multiples of 10 from a starting amount as shown on this recording sheet. This helps them to see how adding and subtracting groups of 10 is similar to adding and subtracting single-digit numbers and to relate this understanding to problems such as 4 + 5 = 9 and 40 + 50 = 90 or 9 – 4 = 5 and 90 – 40 = 50.

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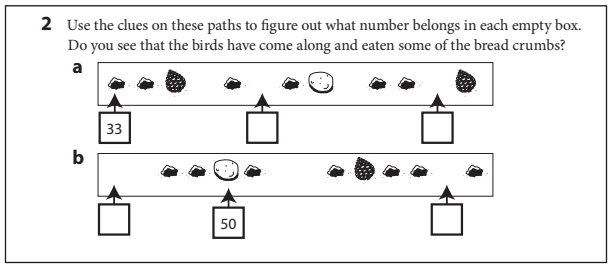
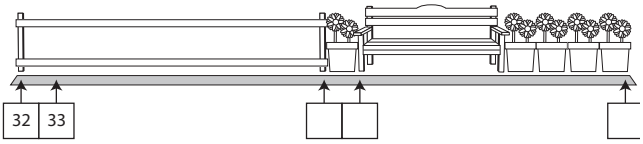
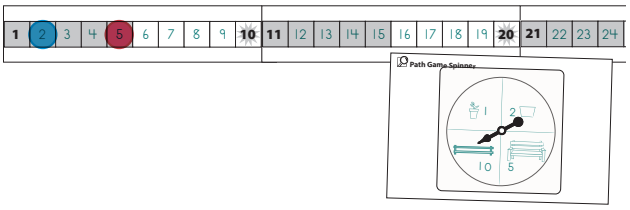
PROBLEM	COMMENTS
Write the numbers that belong in each empty box.  **2** Use the clues on these paths to figure out what number belongs in each empty box. Do you see that the birds have come along and eaten some of the bread crumbs? **a** 33 **b** 50 The fence on this path begins at step 32.  32 33 *"Hmm, 32 + 10 for the fence length is 42. 42 + 1 flowerpot is 43. From 43 to the end of the bench is 5 more… and 48 and then 4 more is 52."*	Students explore the fairy-tale world of Hansel and Gretel and help them mark paths in the woods with pebbles, pinecones, and breadcrumbs to mark intervals of 10s, 5s, and 1s. They use this path-like number line to skip-count by 2s, 5s, and 10s as they add to and subtract from different starting numbers. Later, students make a partner game themselves involving a path 120 steps long. They spin to make jumps of 1, 2, 5, or 10, and later 20 or 30, to race from one end of the path to the other.  1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 Path Game Spinner 1 2 10 5

FREQUENTLY ASKED QUESTIONS ABOUT UNIT 7

Q: How does building numbers with different materials help my child understand place value?

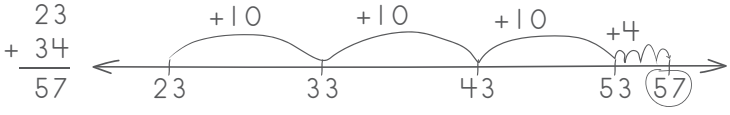
A: Understanding place value and its base ten structure is essential to a student's development of number sense. When students build 2-digit numbers, they quickly learn that counting items one by one is time consuming. In order to build numbers quickly and efficiently, they must think about the value of each digit. Counting 7 bundles of 10 is much faster than counting 70 single sticks. Students understand that 73 is larger than 37 because it is made of 7 tens, while 37 has only 3 tens. Understanding the structure allows them to calculate 2-digit numbers. When they first begin adding 2-digit numbers, they will break or split numbers into 10s and 1s and add the parts together. For example, a student might add 28 and 33 by adding the 10s, adding the 1s, and then combining the results (20 + 30 = 50, 8 + 3 = 11, and 50 + 11 = 61).

Q: The Hansel and Gretel number line path looks like a lot of fun, but I'm not sure of its purpose.

A: The number line activities in this unit build on the work done in Unit 4. Students skip-count forward and backward along the number line path as they learn to recognize the patterns that exist in our number system. This practice helps them notice each number's place in the counting sequence and the distance between numbers. They come to think of adding and subtracting as a process of moving from one number to another, and to do so quickly and efficiently.

The ability to add or subtract 10 to any number is a foundational skill for many computational strategies involving larger numbers. Once students understand the counting pattern, adding and subtracting 10 is fairly easy. Students recognize that the 1s stay constant, while the 10s numbers increase sequentially (as in 27, 37, 47, 57…). For example, in adding 23 and 34, students might start at 23, then jump 3 tens on the number line (23 to 33, 33 to 43, 43 to 53) and then jump 4 ones (54, 55, 56, 57). This kind of flexible thinking develops strong mental math.

The number line path lessons establish the thinking process that will be used to make number comparisons in Unit 8. This strategy is further developed in second grade.



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