Topic E
How Many Questions with 0 to up to 9 Objects

PK.CC.1, PK.CC.3abc, PK.CC.4

Focus Standard:	PK.CC.1	Count to 20.
	PK.CC.3abc	Understand the relationship between numbers and quantities to 10; connect counting to cardinality.
		a. When counting objects, say the number names in the standard order, pairing each object with one and only one number name and each number name with one and only one object.
		b. Understand that the last number name said tells the number of objects counted. The number of objects is the same regardless of their arrangement or the order in which they were counted.
		c. Understand that each successive number name refers to a quantity that is one larger.
	PK.CC.4	Count to answer "how many?" questions about as many as 10 things arranged in a line, a rectangular array, or a circle, or as many as 5 things in a scattered configuration; given a number from 1–10, count out that many objects.
Instructional Days:	5	
Coherence -Links to:	GK–M1	Numbers to 10
	GK–M5	Numbers 10–20 and Counting to 100

Topic E opens with an exciting new number, zero. Children easily understand *none* and *nothing* when used in a meaningful context: "I ate all of my crackers. There are none left." In Lesson 21, children learn to describe *nothing* numerically, "I have 0 crackers." The concept of 0 is deceptively simple. It is easy to work with and understand, but initially, it is not entirely clear to the student why it is needed. Therefore, its introduction is delayed until students have sufficient familiarity with the number core to understand this new level of abstraction. It is introduced prior to ten since the numeral is used within 10 (in Grade 1, Module 2, 10 is understood as 1 ten and 0 ones).

The remaining Topic E lessons continue the pattern established in Topics A and C. Lesson 22 begins with students counting out 8 grapes, represented by square inch tiles. They add *1 more* piece of fruit (a blueberry), and then touch and count 9 pieces of fruit (**PK.CC.3c**). Once all of the fruit is eaten, children count 0 pieces of fruit.

Lesson 23 explores 9 in relation to 5 by returning to the context of the explorer crossing the creek, familiar from the first half of the module. As this context moves forward, it gains in depth. For example, during the Debrief, students might observe the difference in the size of the rocks when using 9 rocks as opposed to when using 7 rocks to cross the creek. This mathematically important observation hints at the Kindergarten through Grade 5 theme that the smaller the unit, the more units necessary to make an equivalent amount, e.g., 10 ones = 1 ten, 3 feet = 1 yard, $\frac{2}{4} = \frac{1}{2}$, etc.

In Lesson 24, children count the Math Way from 0 to 9. Again, students touch and count cotton ball chicks as they hatch from plastic eggs, using their fingers to count *how many* as each "chick" (finger) hatches and stands.

In Lesson 25, children work with arrays, counting storybook characters in groups of 3. They start with 3 blind mice, and then place 3 little pigs in a row beneath to create a 2 by 3 array. Finally, they add 3 little kittens to another row, counting to 9 in a 3 by 3 array from left to right and top to bottom.

Throughout Topic E, children develop fluency with one-to-one correspondence as they count to 9 while marching, clapping, or flapping. They continue to make groups of up to 8 objects, now including 0 as an option, especially when the wind blows all the "trees" (dominoes) down.
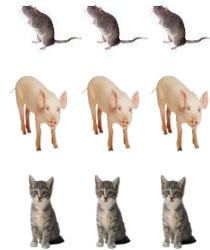
A Teaching Sequence Towards Mastery of *How Many* Questions with 0 to up to 9 Objects
Objective 1: **Introduce zero.** **(Lesson 21)**
Objective 2: **Introduce 9, and relate 9 to 8 and *1 more*.** **(Lesson 22)**
Objective 3: **Use linear configurations to count 9 in relation to 5.** **(Lesson 23)**
Objective 4: **Count from 0 to 9 from left to right on the fingers.** **(Lesson 24)**
Objective 5: **Count 9 objects in array configurations.** **(Lesson 25)**