K:3 Say the Numbers (Teens, Decades)

Teacher Notes

Math Milestones™

Central math concepts

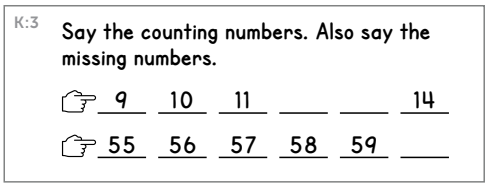
Task K:3 combines reading and remembering: reading the given number symbols aloud as number words, and remembering the number word list for the missing portions of each sequence. The first sequence in the task deals with the passage from single-digit numbers to teen numbers, while the second sequence deals with the end of one decade and the beginning of the next.

The number words *zero, one, two, three, four, five, six, seven, eight,* and *nine* follow no mathematical system. There's also no system to the corresponding symbol sequence 0, 1, 2, 3, 4, 5, 6, 7, 8, 9—just a few suggestive hints of meaning, such as the symbol 1 consisting of a single stroke, or the symbol 3 having three "points." Then with the larger numbers 10, 11, 12, 13, 14, 15, 16, 17, 18, and 19, systematic patterns appear, patterns that continue into the decades up to the number 99. However, because of irregularities in the number word list in English, the correspondence between numerals and number words presents challenges. For example, *twenty, thirty, forty,* and *fifty* do not contain their logical root words *two, three, four*, and *five*. And the suffix *-ty* doesn't say "ten," obscuring the relationship between the decade words and the number ten that is the basis for counting the decades. These irregularities can lead to errors in reciting the number word list, such as when students say, "...thirty-eight, thirty-nine, thirty-ten, thirty-eleven, ..." Irregularities in the correspondence between number words and numerals will require additional attention in grade 1, when students learn to interpret two-digit numbers as amounts of tens and ones (see the Teacher Notes for task **1:2 Tens and Ones**).

Being able to recite the number word list in order isn't the same as understanding what quantities those words name, nor is it the same as understanding how to use the number word list as a tool for determining how many objects there are in a collection. Rather, "Students usually know or can learn to say the counting words up to a given number before they can use these numbers to count objects or to tell the number of objects." Indeed, "Students become fluent in saying the count sequence so that they have enough attention to focus on the pairings involved in counting objects" (*Progression* document,† p. 4).

Relevant prior knowledge

The following mathematics knowledge may be activated, extended, and deepened while students work on the task: recognizing numerals; and saying the corresponding number words.



Answer

First sequence: "Nine, ten, eleven, twelve, thirteen, fourteen." *Second sequence*: "Fifty-five, fifty-six, fifty-seven, fifty-eight, fifty-nine, sixty."

Click here for a student-facing version of the task.

Refer to the Standards

K.CC.A.1, 2; MP.6, MP.8. Standards codes refer to www.corestandards.org. One purpose of the codes is that they may allow a task to shed light on the Standards cited for that task. Conversely, reading the cited Standards may suggest opportunities to extend a task or draw out its implications. Finally, Standards codes may also assist with locating relevant sections in curriculum materials, including materials aligned to comparable standards.

Aspect(s) of rigor:

Procedural skill and fluency

Additional notes on the design of the task

The task isn't intended to be about intuiting a number pattern; the "pattern" here is just the standard counting sequence.

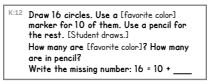
Extending the task

How might students drive the conversation further?

- The task could be repeated, with different runs of numerals each time.
- Students could write the missing numbers 12 and 13, if they have learned about writing teen numbers by that point in time (CCSS K.CC.A.3).

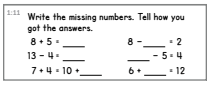
Related Math Milestones tasks

K:12

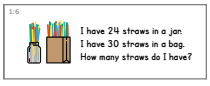


Task **K:12 Make Ten and Some More** involves a collection in which the number of objects is in the teens.

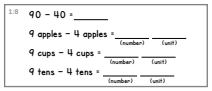
1:11



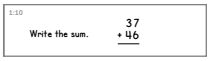
1:6



1:8



1:10



In later grades, task **1:11 Using Properties and Relationships** focuses on the extension of addition and subtraction to problems within 20. Tasks **1:6 Two Groups of Straws**, **1:8 Subtracting Units**, and **1:10 Two-Digit Addition** involve addition or subtraction with two-digit numbers.

Curriculum connection

1. In which unit of your curriculum would you expect to find tasks like K:3? Locate 2-3 similar tasks in that unit. How are the tasks you found similar to each other, and to K:3? In what specific ways do they differ from K:3?
2. Thinking about the curriculum unit you identified, at what point in the unit might a task like K:3 help students converge toward grade-level thinking about the important mathematics in the task? What factors would you consider in choosing when to use such a task in the unit?*

† Common Core Standards Writing Team. (2011, May 29). *Progressions for the Common Core State Standards in Mathematics (draft): K, Counting and Cardinality; K–5, Operations and Algebraic Thinking*. Tucson, AZ: Institute for Mathematics and Education, University of Arizona.

* Math Milestones™ tasks are not designed for summative assessment. Used formatively, the tasks can reveal and promote student thinking.

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Anticipating and responding to student thinking about the task

Imagine how students might think about the task, and what you might see and hear while they work.

On this page, you can write your thoughts on the following questions.

Solution Paths

- What solution paths might you expect to see?
- What representations might you see? What correspondences between those representations might be noticed by students (or be worth pointing out to students) and discussed by them?
- What misconceptions or partial understandings might be revealed as students work on the task? How could you respond to these positively and productively?

Language

- What might you expect to hear from students engaged with the task? What does that language reveal about their mathematical thinking, and how might you respond to different ways of thinking?
- If students are using early English or using multiple languages in an integrated communication system, how might you help their classmates see those mathematical ideas as valuable?
- Even when using nascent language, students are thinking and communicating their thinking. What might it look like to respond positively and productively to the mathematics in their thinking before giving feedback on the language used?

Identity, Agency, and Belonging

- How can you engage students' interests, experiences, or funds of knowledge?
- How can you build students' self-confidence as learners, thinkers, and doers of mathematics?
- What choices are there for a student to make in the task? How can you build students' agency to the point where they notice and make these choices to solve problems?
- How might one use feedback to build student agency? Where might there be opportunities to build students' self-confidence?