

Grouping Tens and Ones

Strand: Number and Number Sense

Topic: Counting and writing numerals from 0 to 110

Primary SOL: 1.2 The student, given a collection of 110 objects, will
a) group a collection into tens and ones and write the corresponding numeral

Related SOL: 1.1a, 1.1b, 1.5a, 1.5b

Materials

- Place-value mat (attached)
- Groupable place-value materials (e.g., beans and cups, counters and 10 frames, linking cubes that can be snapped together to make a “train” of ten, straws and rubber bands)
- Small cups (such as condiment cups)
- Large place-value mat and materials (or use a projector)
- Dry erase markers
- Dry erasers

Vocabulary

count, digit, grouping, groups of ten, number, ones, place, place value, regrouping, tens, value, set

Student/Teacher Actions: What should students be doing? What should teachers be doing?

Note: It is important that the groupable place-value materials do not require trades, like base-10 blocks. Conservation of number is applied when students understand that a group of 10 objects is still 10 objects, regardless of whether they are arranged in a cup, stack, groups, etc.

1. Show students a collection of about 25 beans or other small objects. Have students brainstorm different ways they could count to find the total number. Some students may represent the number using 25 counters organized randomly, 25 counters in groups of five, two groups of ten and five ones, or one group of ten and 15 ones. Ask students: How could you show 25? How did you count the objects to make sure that you have a total of 25? Were any of the ways that you counted faster than other ways? Why did it seem that way?”
2. Show students a place-value mat. Discuss the features of the mat. (Students should notice the two columns, the word tens at the top of one column and the word ones at the top of the other column.) Explain to the students that, “*We are going to count this collection of objects using this mat, placing one bean on the mat at a time and once we get to ten, something very important has to happen.*” Start placing one bean at a time, asking students, “*How many ones do we have? Do we have a group of 10 yet? How many more beans do we need to have a group of 10?*” (See the example below.)

Tens	Ones
	

3. When you get to 10, place all 10 beans in a cup, and with much fanfare move it to the tens column on the mat. Ask, “How many beans are in the cup?” Write the number 10 underneath the cup of beans. Tell the students “We now have one group of ten.” Continue until all of the beans have been counted, pausing each time a group of 10 is made. Have students tell you the number to write on the place-value mat by saying how many groups of 10 and how many leftover ones. Once you have placed all of the beans on the mat, ask, “Now that we have them organized by groups, what is a quick way to count the beans to see how many we have total?” Guide students to count the cups of 10 first and record as two groups of 10, then count their ones and record five ones (see attached).
4. Display a blank place-value mat on the projector and ask, “How many items are on the mat?” Talk about the numeral zero and ask students, “If I wanted to write a number to represent the total we have, what would I write?” Record it to represent the numeral zero on the blank mat.
5. Allow students to return to their desks to work with a partner. Provide each partner with a place-value mat (made by folding an 8½” x 11” sheet of paper in half lengthwise and labeling the two columns formed by the crease with the headings “Ones” and “Tens”) and a visual representation of each category. (The attached place-value mat can be laminated for students to use and write on.) Give each pair of students a different number of objects (20–40 objects) that are groupable place-value materials to use for manipulation (e.g., beans and cups, counters and 10 frames, straws and rubber bands).
6. As students are working, the teacher should be walking around, observing students’ work and asking students to discuss what they are doing. *Are students making the connection between the groups of 10 and the digit in the tens place? Similarly, are they making a connection between the leftover ones and the digit in the ones place? Can students tell you how many more ones are needed before they can make another 10? It is important to make sure that the students understand that when we get to 10, we make a group of 10 and it moves over to the tens place.*
7. Ask the students to clean up and return to their desks. Use these questions to guide a discussion: *How many objects did you have? What did you do to figure it out? How many groups of 10 did you have? How many leftover ones were there? How did knowing the groups of 10 and leftovers help you to know the number of objects? If you dumped out (or disconnected) your groups of 10 and counted all of the objects by ones, how many would you have?*

Note: Students need many experiences with grouping all types of groupable place-value materials into sets of tens and ones and recording the corresponding numerals. At this level, emphasize that one group of tens represents 10 ones and that grouping is a more efficient way to count a large number of objects.

Assessment

- **Questions**
 - What numeral represents “no objects” in a group?
 - Look at the numeral 40. What does the 4 represent? What does the 0 represent? (four groups of 10; zero ones)
 - When I have groups in the tens column, do I have to count each individual piece, or is there a quicker way to count them?
 - If I had 43 stickers, how many groups of 10 do you think I could make? Will I have any leftovers? Explain how you know.
- **Journal/writing prompts**
 - Represent the number 72 in at least two different ways. Use pictures, numbers, and words. (Possible responses include showing seven groups of 10 items and two ones; showing seven groups of 10 and two single units; writing $70 + 2$)
 - I have five baskets of 10 apples and three more apples. Show and tell how you can figure out how many apples I have all together.
 - You have 58 marbles, and I give you two (or any number) more. How many groups of tens would you have and how many single ones are left? Use a place-value table to prove your answer.
 - I have three groups of 10 and two ones, what is my number?
- **Other Assessments**
 - Make observations while groups are counting and regrouping objects.
 - During center rotations, included a teacher center where students count a random collection of groupable place-value materials on a place-value mat, recording how many tens and ones they have and the numeral representation.

Extensions and Connections (for all students)

- Set up part of the bulletin board as an “Estimation Station.” Each week, have a different student take home a “Estimating Jar” and fill it with items to estimate the total. The objects can then be grouped by tens and counted to determine the actual count for additional place-value practice.
- Place a place-value mat in your center rotation, along with some pennies and a bag of numbers 1–110. Allow students to use pennies as representation on the place-value mat for the number they selected from the bag. Students should stack pennies in the tens column to show one group of 10 pennies or use a cup to make a group of 10. Have students record this information in their math journals by drawing the group of pennies and making a circle around groups of 10.

- Give students a bag of objects to count. Ask students to write how many, draw a picture to represent how many, tell how many groups of ten and ones are used in the numbers, and how they know. Be sure to count the objects in the bags and make note of the number before students complete this variation of the activity.

Strategies for Differentiation

- Pair students to help support each other’s learning.
- Begin working with small amounts of items to group and count, increasing the number of items to be counted as students demonstrate readiness.
- Provide a sentence frame: “I have _____ groups of ten, and I have _____ ones. I have _____ in all.” Have students use the sentence frame to record the results of their grouping and counting experiences.

Note: The following pages are intended for classroom use for students as a visual aid to learning.

Groups of Ten	Ones
	
I have _____ groups of tens.	I have _____ ones.

My number is _____.