TEACHER GUIDE

INTRO TO COUNTING OBJECTS

GRADES K–2

COMMON MISCONCEPTIONS

• Changing the order or arrangement of objects changes the quantity.

Students may believe that placing objects into a different arrangement or spacing them further apart changes the number they use to represent the quantity. Allow students an opportunity to count the objects after a rearrangement to prove that the quantity remains the same. Show students that we can count objects starting with any object in the group and in any order, as long as we say the numbers in the correct order and only point to each object once. We can point to the objects in forward or backward order, but the order of numbers remains the same, and the last number said always represents the quantity. You can also place 6 marbles in a box and allow students to count them. Close the box and shake it. Has the quantity of marbles changed? Have students count the marbles again to confirm.

• Changing the order of objects means that the order of counting changes too.

Students may believe that a number name follows each object when we rearrange the set. For example, after scrambling 6 counted objects, students may believe that we should now count the objects “three, one, six, five, four, two.” Remind students that we always say numbers in order, because the next number always tells us that we are counting one more object. Again, ensure that students count each object only once.

• A group of 6 objects only contains a group of 6 objects.

Students may not understand that a group of 6 objects contains subgroups of 1, 2, 3, 4, and 5 objects. Build students' understanding of this concept by growing a group of objects from one onward. Start with one object, then ask, how many are there when I put one more? There are two. If I add one more? Three. Continue until there are 6. Then ask, are 5 objects still here? Show the students how to count 5. Are 4 objects still here? Show how to count 4. Show students that if we have 6, that means we also have 1, 2, 3, 4, and 5. To check their understanding, take away 2 objects, and ask if we can count 6. No, we can count 4 at most. But we can still count 1, 2, and 3.

COUNTING GROUPS CONTAINING UP TO 20 OBJECTS

Begin by having students practice counting how many objects are in a group, up to 5. Use actual objects for the first part. Once students master counting up to 5 objects, allow them to count up to 10 objects. Next, have them count up to 20 objects. This is more challenging, since students may still be practicing the irregular number names between ten and twenty. Students should understand that the numbers are said in order and that each consecutive number represents one more than the last.
COUNTING OUT UP TO 20 OBJECTS AND UNDERSTANDING SUBGROUPS

After students practice counting how many objects there are within an existing group, they can practice counting out a given number of objects from a group. For example, given a pile of counters, ask students to count out 4, then 11, then 19. This is more challenging, because it calls on students to form a stronger association between a quantity and the last number that is said, and to know when to stop counting and saying number names. Ask students to count how many objects there are in a group of 8 objects. Next, tell them we only need 6 of the objects. Can we count out 6 from a group of 8? Repeat this exercise with a few examples. Students should see that within a group of objects, we can also find smaller subgroups of all the numbers that are smaller than the original group’s size.

CHANGING ARRANGEMENTS AND SPACING

Ask students to count how many objects are in a group. Then, change the spacing of the objects, and ask students if there are more now. If students answer incorrectly, have them count out the objects again. Scramble the order of the objects and ask the students how many there are now. Ensure that when counting objects that have been scrambled, students still say number names in order.

TEACHER TIPS

While students are learning to count how many objects there are in a group, they should be allowed to touch the objects, but they may not necessarily be able to move them. If students are counting the number of objects in a group of up to 10 objects, they can be scattered, but if there are between 10 and 20 objects, they should be arranged in a way that is easier to keep track of, such as a line, a rectangular array, or a circle. If students are asked to count out a number of objects from a group, the group can be in a scattered configuration.