

# Conservation and Counting

## Interviewing a Student Grades K-1

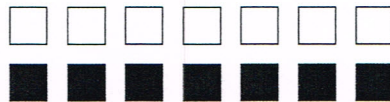
**Materials Needed:** 10 each of two colors of counters or cubes.

The following questions will help you learn about a child's conservation of number. Use the following questions to conduct an interview with a young child to determine if he/she is a conserver.

### Conservation of Number

Piaget described a child as a conserver if he/she recognizes that two equal quantities are the same amount even though one appears to be more. A nonconserver will be "fooled" by the visual arrangement or appearance of the objects.

1. Use cubes to build two trains. Use two colors of cubes but the same number of each color.



Ask: Which is more? Once it is established that the trains are equal in length, point to one train (black) and ask "How long is this train?" Observe how the child counts. Then point to the other train (white) and ask "How long is this train?" Does the child count again?

2. Break up one train (i.e., separate the cubes). Again ask: Which is more?



If the child says one row is more, ask "How many black cubes? How many white?" Does the child count again after the cubes have been rearranged?

3. Provide some counters (about 20) for the child to estimate. Ask "About how many counters are here?" After an estimate is made, ask them to count them and observe how they count. Once a number of counters is established, mix the counters again (be sure to NOT add or remove any counters) and ask "How many counters are here?"

### Gearing Up:

Determine how the child answers questions, such as:

If the black train has 8 cubes, and the white train has 1 less, how many cubes are in the white train?

If the black train has 8 cubes, and the white train has 2 more, how many cubes in the white train?

### REFLECTION:

1. If you noticed any counting errors, describe them and tell what counting principles (described on the following page) were not applied?
2. Tell how their responses provide you insight into whether or not they are conservers.

**Materials Needed:** 20 counters.

The following questions will help you learn about a child's counting skills. Counting is an important process that takes time and practice to develop. There are identifiable counting stages and counting principles that research has identified. This activity provides some structure to focus on different aspects of counting, namely rote counting, counting objects, and writing numbers in order.

Ask a child to count or observe a young child counting. You might begin by asking them to:

1. Rote count aloud:  
Can you count? How far can you count?  
Please count for me to \_\_\_\_\_ (you decide a goal).  
Record how far they counted before the first error.

Did the child use number names in the proper order? If not, how far did the child count before errors occurred? Ask them to count again and see if the errors occur with the same names.

2. Count objects:  
Place some counters for the child to count.  
Ask them to count and tell you how many.

Did you notice the child using 1-1 correspondence in applying a number name to an object? If not, describe their error patterns.

3. Recording:  
Ask if they can "write" their numbers. If so ask them to count and write the numbers as they count. Review their written numbers and describe their progress.

### REFLECTION:

Keep the following counting principles in mind as you reflect on what you observed.

#### Principles Children Apply when Counting

1. One to One—Each object is assigned only one number name.
2. Stable Order—The number names must be used in the same order every time one counts.
3. Order Irrelevance—The order in which the objects are counted doesn't matter.
4. Cardinality—The last number name used gives the number of objects.

1. Did you witness all four of the counting principles? **Y N**  
If **no**, which one(s) did not appear?
2. Illustrate what the child did or said to convince you that a particular counting principle was or was not being followed.