

About Numbers and Counters



Numbers and Counters

Material Description

The Numbers and Counters include 55 identical, small objects as counters. Usually, these are red wooden discs measuring about 0.8 inches (about 2 cm), which look similar to tokens from a board game. The other element of this material is the numbers, which are red wooden cut-outs of the numbers 1–10 (10 is created by putting together 1 and 0). The numbers may also be small cards printed in red with the numbers 1–10. The Numbers and Counters are stored in a divided wooden box with a lid.

Discovering More

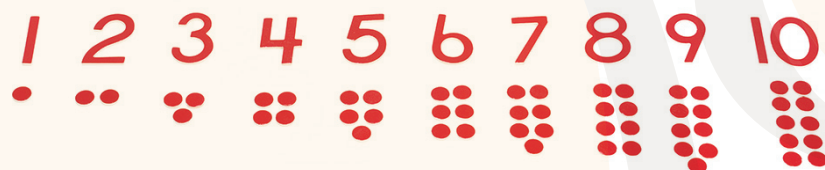
- The Numbers and Counters activity is a culmination of all the child has learned so far in the Montessori math curriculum. It allows the child to demonstrate her understanding of symbol recognition, sequencing, and quantity, all at once.
- The Numbers and Counters are more challenging for the child as there is no fixed element in the material and the child works from numeric symbols to quantities. The child



“[The child] arranges [the counters] upon his own table, in columns of two, and if the number is uneven, he places the odd piece at the bottom and between the last two objects.” — Maria Montessori, *The Montessori Method*, p. 330.

must order the numbers by sequencing them correctly and determine the corresponding quantities by counting.

- Arranging the counters in rows of twos to form pairs is a familiar task for the child. She has already worked extensively with identical pairing (matching objects that are the same) using many of the sensorial materials, including the Color Tablets, Touch Tablets, Touch Fabrics, Thermic Tablets, Sound Cylinders, and Smelling Bottles.



The arrangement of the counters provides the child with a visual introduction of odd and even numbers

- As the child lays out the counters for each number, she is introduced visually to the concept of odd and even numbers. Working with an even number, she can see that the counters line up evenly in pairs. With an odd number, she can see that a single counter always remains unpaired.
- The placement of the counters shows the child how, in addition to being composed of individual units, numbers can also be seen as being composed of smaller groups of numbers, such as pairs and remainders.
- The Numbers and Counters activity prepares the child for future work with division and the concept of remainders.
- Laying out the counters in rows of twos introduces the idea of counting in twos, multiples, and prepares the child for future work with skip counting.



The child first works with identical pairing with sensorial materials

Activity

Matching Numbers and Counters

Age

- 4.5 years old

Direct Aims

- To show mastery of sequencing numbers and counting quantities 1–10.
- To associate quantities and numeric symbols.

Indirect Aims

- To be visually introduced to the concept of odd and even numbers.
- To experience working with multiples of two and prepare for skip counting.
- To prepare for future work with divisibility and remainders.

Control of Error

- The number of counters.

Points of Interest

- Placing the counters below each number.
- Seeing how the arrangements of counters differ between odd and even numbers.
- Seeing the pattern when the counters are laid out.

Note

To maintain interest, periodically change the objects used for counters (e.g., 55 flowers, 55 pebbles, etc.).



Matching Numbers and Counters

Purpose

To provide a child with the opportunity to show mastery of sequencing numbers and counting quantities 1–10.

Material

Numbers and Counters.

Presentation

- Invite a child to the math shelf to work with the Numbers and Counters.

- Ask the child to carry the box of Numbers and Counters to the table with both hands.
- Remove the numbers from the box and place them randomly in the middle of the table.
- Invite the child to find and place the number 1 on the top left side of the table and the number 10 on the top right side. (Show the child how to make the number 10 from 1 and 0 if necessary.)
- Invite the child to order and place the remaining numbers between 1 and 10.
- Point to number 1 and name it: “One.”
- Select a counter from the box and place it below the number 1. As you lay down the counter say, “One.”
- Point to number 2 and name it: “Two.”
- Select a counter from the box and place it below and to the left of the number 2. As you lay down the counter say, “One.” Place another counter to the right of the first, forming a pair. Leave a small space between the two counters. As you lay down the counter say, “Two.”
- Repeat the procedure for the number 3. As before, place the first counter below and to the left of the number and the second to the right, forming a pair. Show the child how to place the third counter below the pair and centered.
- Continue counting and laying out the counters to the number 10, inviting the child to take over when she is ready.
- Ask the child to name each number and count the corresponding counters, 1–10.
- Return the Numbers and Counters to the box.
- Invite the child to repeat the activity and return the material to the shelf when finished.
- Tell the child that she is now free to work with the Numbers and Counters in the same manner.



Child ordering the numbers between 1 and 10



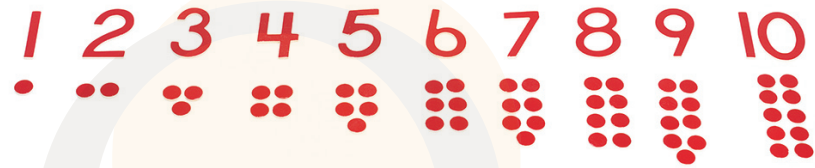
Child placing two counters below the number 2



Child naming each number and counting its counters

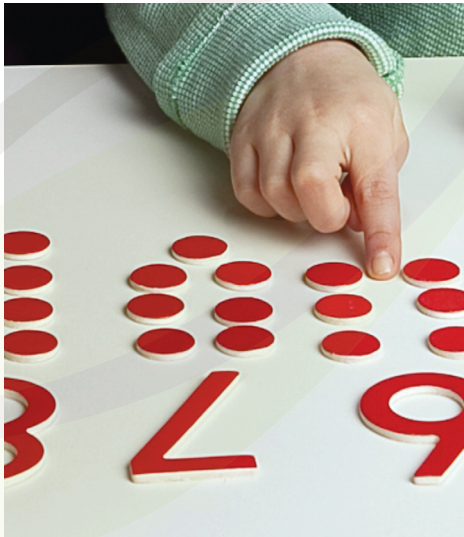
Extensions

Discriminating Between Odd and Even Numbers



Visually discriminating between odd and even numbers

- Invite the child to repeat the activity and learn more about the arrangements of the counters.
- With the child, describe how the counters are arranged under each number and how they differ. Discuss that every other arrangement is different from the previous one by having a counter that does not have a partner or friend.
- Invite the child to count each of the arrangements, pointing out which counters have partners and which do not.
- Explain that the partnered counters are called pairs. The numbers whose counters are all paired are called even numbers.
- Center your index finger at the base of the number 2. Move your finger straight down between the two columns of counters.
- Invite the child to do the same. Reinforce to the child that 2 is an even number.
- Point to 3, a number that has an unpaired, single counter. Say that numbers that have an unpaired counter are called odd numbers.
- Center your index finger at the base of the number 3. Move your finger straight down between the two columns of counters, stopping when you hit the centered counter.
- Ask the child to do the same. Reinforce to the child that 3 is an odd number.
- Invite the child to identify which numbers are odd and which are even.



Kinesthetically discriminating between odd and even numbers

Identifying Odd and Even Numbers

- Invite the child to lay out the numbers in sequence and identify which numbers are odd and which are even. Suggest that he place the correct number of counters below each number to confirm his answers.
- Invite the child to lay out the numbers randomly and identify which numbers are odd and which are even. Suggest that he place the correct number of counters below each number to confirm his answers.
- Invite the child to learn a different way of identifying odd and even numbers. Place three uncounted piles of counters in front of the child, each with fewer than ten counters. Invite the child to arrange each pile, count the arranged set, and place the correct number above it. Encourage the child to identify which are odd and which are even.



Identifying odd and even numbers

Sorting Numbers into Odd and Even

- Invite the child to sort numbers as odd or even.
- Ask the child to lay out the numbers in sequence.
- Place the labels Odd and Even at the top of the work area.
- Invite the child to place the number 1 under the correct label, Odd.
- Continue in the same manner with the remaining numbers, sorting them into two columns.
- Invite the child to repeat this extension by laying out the numbers randomly to start.

| Odd | Even |
|-----|--------|
| 1 | 2 |
| 3 | 4 |
| 5 | 6 |
| 7 | |
| | 8 9 10 |

Sorting numbers into odd and even