

Montessori Primary

MONTESSORI PRIMARY

Mathematics 1



Adda Montessori

An Introduction, Remedial and the Place Value of Numbers in Mathematics

An Introduction

Mathematics in our Montessori settings should be based on understanding numbers and its relationship with life, we should use concrete materials to establish this understanding. Pupils need a deep knowledge of the numbers and its patterns. How do we achieve this in the Primary setting?

We use stories. That is the answer. We start with the Fifth Great Lesson the Story of Numbers, the origin of counting and the symbols used to represent this, research the systems of counting used over the ages, and our present system the Decimal system.

There are also many interesting stories about how mathematical concepts came into being. We should look at great mathematicians down the ages as these make Maths much more interesting for our children. The stories motivate and inspire them to want to know more. Mathematics can be a loved subject it depends on how you present it to the children.

We must look at how to start the Maths program in your settings. Work that emanates from the 5th Great story will give you a fair insight as to where your children are at. Depending on where they are coming from and how their preschool learning of numbers were handled you may want to do some remedial work to bring the children up to speed and ensure that the gaps in understanding is addressed.

Remedial Maths

1. Ensure that the children can count one on one correspondences: Use the short bead stairs
2. Understanding of the concept of zero
3. Introduce the decimal system both concrete and symbols and ensure they know the terms, unit, tens, hundreds and thousands.
4. Use the number cards to increase understanding of the number symbol dynamics

Units: 1, 2, 3, 4, 5, 6, 7, 8, 9 -note no zeros

Tens: 10, 20, 30, 40, 50, 60, 70, 80, 90- tens have one zero

Hundreds: 100, 200, 300, 400, 500, 600, 700, 800, 900- hundreds have two zeros

Thousands: 1000, 2000, 3000, 4000, 5000, 6000, 7000, 8000, 9000- thousands have three zeros

1. Play the bank game
2. The changing game
3. Do simple number operations

This is the simple beginning of ensuring that the children have gotten the basics down. If at any point you find that the child does not understand or remember things and you play games to tease out the answers and they are not forthcoming, simply do a three period lesson and assess the knowledge thereafter. Park here if you need to and work on it till the child feels confident in their new knowledge.

It is important that at no point do you make the child feel that they are struggling or do not know what they should know. This is simply what it needs to be: which is taking the child from where he is to where he needs to be.

Place Value of numbers

A lot of the work you will do in this area to begin with would be revision and expanding the exercises the children have been doing in the nursery school. Going straight into the more advanced sections without making sure that your children have a good grasp of the basics will just frustrate you and the children.

Though your regular children who have gone through the nursery curriculum will not need remedial lessons, they should revise.

Here are some of the things that should be on the shelves for them to work on:

1. Long Number Rods
2. Sandpaper Numerals
3. Long Number Rods and Cards
4. **Long Number Rods and Cards >and< than 5**
5. Introduction to short bead stairs
6. Seguin Board A Ex 1, 2 and 3 (building quantities 11 to 19, then numerals and matching them)
7. Seguin Board B Ex 1, 2, 3 and 4 (building quantities in tens 10 to 90, then the numerals, matching them and then build quantities and numerals from 11 to 99)
8. Introduction to the Golden Beads Decimal System
9. Counting through to the Thousands with Golden Bead Material and The Bank Game including the Changing game.
10. Spindle Box Introduction to Zero

The lesson in Bold will be documented below

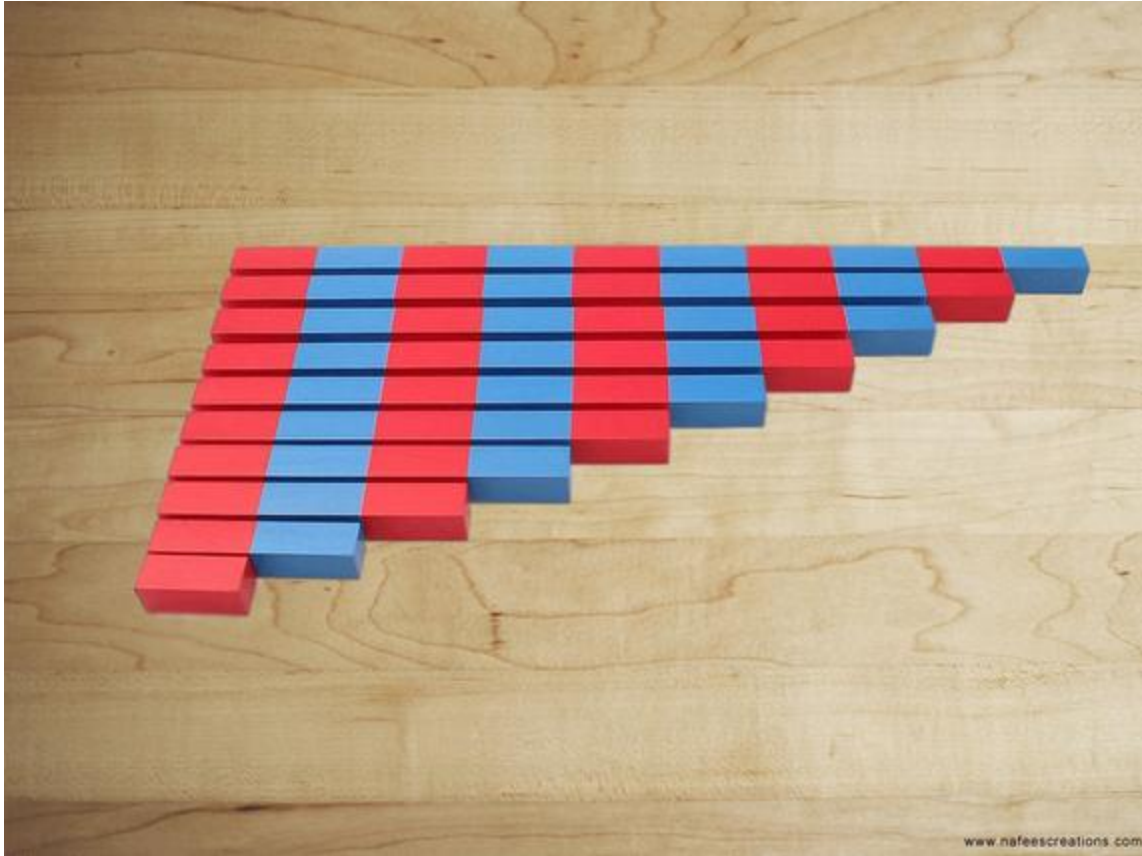
The best way to manage your class at the beginning of your Year 1 (Primary 1) is to always introduce the materials first to the children that are just experiencing Montessori for the first time. Then bring the class together to work on the Materials you want them to pay attention to. Then continue to work individually with the new children ensuring that they understand each concept.

You must obviously keep your eyes open for gaps with your older children. There may be a few still struggling with the shapes of the numerals or the direction of flow for writing them, use the sandpaper letters and get them to practice.

Some may need more work with building numbers or changing with number operations. This is the time to zero in on this, play lots of games and use extensions.

Provide lots of exercises for them to do. You can use exercises from Textbooks if this is all that is available, better still create your own exercises on cardstock and place in containers or baskets neatly labelled on the shelves.

Long Number Rods and Cards: More Than and Less than Five



Materials

Number Rods

Numeral Cards 1-10

> < symbols

A floor mat

Objectives

To identify in numerical terms **greater than** and **less than**

To give the child a concrete and visual representation of the concepts greater and less than

To introduce the concepts of rounding up and rounding down

To introduce the symbols for greater than and less than

To introduce the rule of 5 when rounding any number

Presentation 1

You can present this in a group or individually

Ask the child to bring the rods to the mat. Place the 'ten' rod to the left of the mat.

Place the 10 numeral on the last segment of the 'ten' rod

Ask the child pick the 'five' rod and place it underneath the 'ten' rod leaving a space in between.

You can now place the 5 numeral on the last segment of the rod or ask the child to do this.

Take any rod e.g. the 'two' rod, place it in the gap between the 'ten' and the 'five' rods. Then ask the child to place the 2 numeral on the last segment of the 'two' rod. Now ask the child 'Is the rod more or less than the 'five' rod?

Show the child the less than symbol $<$ and place it next to the 2

Now show the child the symbol for more than and place it next to 5

Explain to the child: Two is less than five and five is more than two

Continue the exercise until all the rods have been placed in between the 'ten' and 'five' rods.

Presentation 2 (Rounding up and down)

You can introduce this concept once the child has fully grasped the concept of greater and lesser than. Lots of games can help solidify this concept.

With the red end of the 'ten' rod, place it on the mat and put the greater than sign on the last segment of the rod. Ask a child to place the 'five' rod below the ten and to place the 5 numeral on the last segment of the rod.

Now ask the child to pick any rod and place it under the five rod.

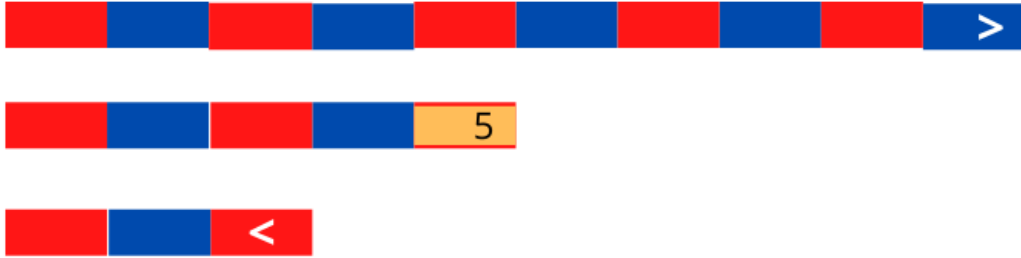
Ask is this greater or lesser than five (let's say the child picked the 'three' rod)

The answer would be it is lesser than five.

Put the lesser than sign on the 3.

Say to the child: 'We can see from what we have here that ten is more than five and three is less than five.'

Mathematics 1



Explain to the child that 'Sometimes we may want to round up a number and when that happens we use 'five' as the middle point, so when a number has less than 5 units we round down to zero, when it has more than or equal to 5 units we round up to 10'

Now remove the 'three' rod and ask the child to replace it with another rod of their choice.

Ask the child if the rod is nearer the red or blue end of the 'ten' rod. (Let's say it's a 'seven' rod).

Once the child has answered that it is nearer the blue end, then ask the child: "Is the rod greater than or lesser than 5?"

The answer is: "It is more than five."

Now remind the child that when we have a number more than five we round up to ten.

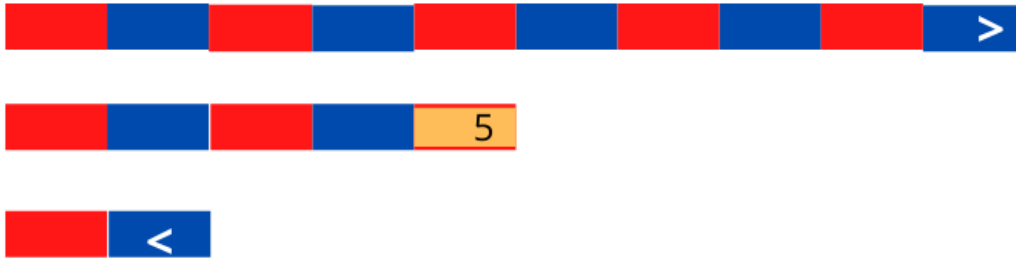
Continue this exercise until you have worked through all the rods.

Presentation 3

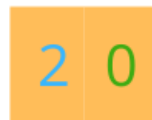
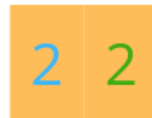
Later on present the following, after the child has been introduced to the decimal system and has built numbers using hundreds tens and units.

Now re-introduce the exercise above, but this time with numbers greater than ten, rounding to the nearest 10 or the nearest 100.

Simply use the rods as a reminder of the rule of five. You can use the large or small bank numerals for the exercise.



The nearest ten is twenty



Again give the children lots of exercises. Make task cards and place in a basket for the children to do. They can fill in the work done in their daily book or a sheet of paper to add to their journal.