



# Mount Anville

Montessori Junior School

2½ – 12 years

## Numeracy Overview of Milestones

	End of Montessori Classes	End of Preparatory Classes
	<ul style="list-style-type: none"> <li>• Sorting colour – colour tablets, size – cylinder blocks, pink tower, brown stair, red rods, shape - knobless cylinders and texture – touch boards, fabrics</li> <li>• Identify the complement of a set e.g. I like/don't like – smelling bottles, tasting bottles, red things/not red things – colour tablets</li> <li>• One-to-one correspondence (5 pencils amongst 5 people, beads) – memory game</li> <li>• Compare objects (length, height, weight, thickness, size) – pink tower, brown stair, red rods</li> <li>• Compare sets without counting – farm, zoo</li> </ul>	<ul style="list-style-type: none"> <li>• Higher order sorting colour, size, shape and texture</li> <li>• Identify complement of a set</li> <li>• One-to-one correspondence to ten</li> <li>• Compare objects by length, height, weight, thickness, size – knobless cylinders, cylinders, red rods, baric tablets</li> <li>• Compare and order sets -</li> </ul>

	<ul style="list-style-type: none"> <li>• Order sets – progressive exercises</li> <li>• Order set according to height/ length – cylinder blocks, knobless cylinders &amp; cards</li> </ul>	
Number (Sorting)	<ul style="list-style-type: none"> <li>• Sort random collections (e.g. hair accessories, lids, dress-up box)</li> <li>• Sort one-property collections in one way (sort by colour, size, shape, roll/not roll) – geometric solids</li> <li>• Sort by two property collections (type of animal and colour)</li> </ul>	<ul style="list-style-type: none"> <li>• Sort by three property collections (beads: shape, colour and size, buttons: shape, size and number of holes) – button bag, sorting bag</li> <li>• Partition sets into subsets e.g. horses, sheep – farm, zoo</li> <li>• Combine sets (a set of boys wearing runners, a set of girls wearing runners, now combine and we have a set of children wearing runners)</li> </ul>
Number	<ul style="list-style-type: none"> <li>• Exposure to 10 but consolidate concepts to 5 – sandpaper numbers</li> <li>• Count objects 0-10 – red rods, spindles</li> </ul>	<ul style="list-style-type: none"> <li>• Combining sets of objects totalling 10 for story of 10 – number rods</li> <li>• Start at 5 count on 3, how many? – snake game</li> </ul>

	<ul style="list-style-type: none"> <li>• Compare equivalent and non-equivalent sets (more/less than) – cards &amp; counters</li> <li>• Order sets of numbers 0-5</li> <li>• Use ordinal number language (first, last)</li> <li>• Combine set 1-5</li> <li>• Partition set 1-5</li> <li>• Conservation of number 1-5 – sandpaper numbers</li> <li>• Recognise sets 1-5</li> <li>• Talk about simple picture problems (2 bikes with 3 children)</li> </ul> <p>Montessori materials:</p> <ul style="list-style-type: none"> <li>• Number rods</li> <li>• Spindles</li> <li>• Cards and counters</li> <li>• Memory game</li> </ul> <p>Use number rhymes e.g. 5 Little Ducks etc on a daily basis at circle time.</p>	<ul style="list-style-type: none"> <li>• Partitioning sets of objects 0-10 (8 people on my team, 6 are girls, how many are boys?) – beads, short bead stair</li> <li>• Subitise (tell at a glance) number of items in a set) – memory game, short bead stair</li> <li>• Use ordinal number language first to tenth</li> <li>• Use loop cards</li> <li>• Simple addition using short bead stair/loose beads</li> <li>• Addition using strip boards.</li> <li>• Discover different arrays of the same number – short bead stair</li> <li>• Concept of odd and even – cards &amp; counters</li> <li>• Recognise teens and manipulate teen boards</li> <li>• Recognise tens and numbers to 100 – hundred board</li> </ul> <p>Understand quantity of numbers to 100 e.g 44 is 4 tens and 4 units – golden bead material, tens</p>
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		<p>Know the symbols for greater than &gt;</p> <p>Less than &lt; and equals =</p>
<p>Relationships and Operations in Number: Patterns (Algebra)</p>	<ul style="list-style-type: none"> <li>Identify pattern in colour, shape and size using beads, buttons, unifix cubes</li> <li>Copy a pattern</li> <li>Continue a pattern – threading beads</li> </ul>	<ul style="list-style-type: none"> <li>Identify pattern in colour, shape and size – binomial cube</li> <li>Copy pattern in colour, shape and size – number rods</li> <li>Extend pattern in colour, shape and size</li> <li>Discover different array of patterns using the same objects</li> <li>Compare equal and unequal sets (more, less, same as) – spindles, short bead stair</li> <li>Predict subsequent sets (e.g. 10, 9, __, 7, 6, __, 4)</li> </ul> <p>Now, pupils can move to partitioning of sets, and it is the foundations to move onto add/subtract – number rods, short bead stair</p> <p>Cuisenaire rods can consolidate experiences here</p> <ul style="list-style-type: none"> <li>Devise a pattern</li> </ul>

		<ul style="list-style-type: none"> <li>Extend a pattern</li> </ul>
Shape and Space	<ul style="list-style-type: none"> <li>Use language of spatial relations – pink tower, brown stair</li> <li>Sort and compare 2D shapes/solids – geometric cabinet</li> <li>Sort 3D shapes – geometric solids</li> </ul> <p>Make shape pictures – constructive triangles</p>	<ul style="list-style-type: none"> <li>Language of spatial awareness to be explored, discussed and developed: over, under, up, down, on, beside, in, straight lines, curved lines, circle, square, rectangle, triangle – constructive triangles</li> <li>Sort, describe and name 2D shapes: square, circle, triangle, rectangle – geometric cabinet</li> <li>Combine and divide 2D shapes to make other shapes – constructive triangles, insets</li> </ul> <p>Give simple moving and turning directions (e.g. beebot)</p> <ul style="list-style-type: none"> <li>Sort, describe and name 3D shapes/solids, include regular and irregular shapes – geometric solids</li> <li>Combine 3D shapes /solids to make other shapes (shape pictures/structures) – geometric solids</li> </ul>
Measure	Language of length – red rods	<ul style="list-style-type: none"> <li>Compare and order by length/height - insets</li> </ul>

	<ul style="list-style-type: none"> <li>• Sort and compare object of length/height – pink tower, brown stair</li> <li>• Language of weight – pink tower, brown stair</li> <li>• Language of capacity – practical life exercises pouring, spooning, funneling</li> <li>• Language of time – sequencing cards, birthday chart</li> <li>• Sequence of daily events – calendar</li> <li>• Language of money</li> </ul>	<ul style="list-style-type: none"> <li>• Estimate and measure in non-standard units</li> <li>• Compare and order by weight – baric tablets</li> <li>• Estimate and weigh in non-standard units – baric tablets, mystery bag</li> <li>• Compare and order by capacity</li> </ul> <p>Choose appropriate materials to act as a measure e.g. span of hand</p> <ul style="list-style-type: none"> <li>• Read time in one hour intervals/half hour intervals</li> <li>• Sequence daily/weekly events and stages of a story – timelines, sequencing cards</li> <li>• Recognise coins from 1c, 2c, 5c, 10c, 20c &amp; 50c</li> </ul> <p>Solve tasks involving money</p>
DATA	<ul style="list-style-type: none"> <li>• Sort and classify object of one criterion (kitchen items, school items, clothes items)</li> </ul>	<ul style="list-style-type: none"> <li>• Sort sets by one and two criterion e.g. red and round</li> <li>• Match sets: equal and unequal</li> <li>• Represent data in 2 rows/columns</li> </ul>

**Montessori materials will overlap the various strands**

## **Counting Activities for all levels**

The ability to recite number words in order is a prerequisite to developing an ability to counting a wide range of objects. Children's ability to recite numbers in order is usually more developed than their ability to count objects. However pupils who find Maths difficult often don't have a full grasp of number sequences and can gain in confidence in this area if the teacher provides daily 10 minutes oral choral work.

*These sessions should have:*

- A lively pace
- Enthusiastic participation
- Two or three different short focussed activities (variety will maintain interest)
- Physical activity
- Choral response
- Individual response

*The pupils should develop the ability to:*

- Count forwards from 1
- Count backwards
- Count forwards/backwards from different starting points.

### Some suggested activities:

- **Counting stick**
- **Rhythm counting**- use actions such as: clapping, slapping, tapping. Pupils chant number words in time with the rhythm
- **Counting apple** (pendulum) Pupils chant numbers in time to a swinging apple (weight attached to a long string). This can also be used for counting quantities/sets of objects
- **Live number line**: Pupils are given large cards with each number and are asked to line up in order of the sequence. Teacher/pupil then ask other pupils to swop with those in the line emphasising language: before/ after, more than /less than, between, first/second..., Largest/smallest etc
- **Stand and Sit game**: Pupils stand and then sit while saying the number sequence required
- **Clap and Snap game**: Count forwards clapping in time, then count backwards snapping fingers in time
- **Stamp and tap**: Pupils find a space facing the board. Count forwards stamping feet in time. Stop at required number word and turn in opposite direction. Now count back tapping their shoulders in time. (Do this without pausing!)
- **Class number line** (Pegs on a line): Count forwards/backwards while looking at each number. T. points to a number and pupils say that number together. Say number before/ after given number. Turn one number around, pupils tell (individually) hidden number and explain their thinking.



- **Show me**: Teacher shows flash cards with different numbers of objects. Pupils count silently and show corresponding number using Digit cards.
- **Move your marker**: Pupil have number line (1-5/1-10) and a counter/cube. T. gives instructions e.g. “Put your counter on the number that comes just before/after” or on any number greater than..../between etc.
- **Head and shoulders**: Tap head and shoulders in turn to a rhythm. Say number sequence while doing this. Then develop it asking pupils to only say the number on the head tap. Number on shoulder tap is said silently.
- **Pass the Teddy**: Pupils stand in a circle. As Teddy is passed around the ring pupils say the next number or can say “I am one I pass it to two” etc.
- **Count Around**: Pupils stand in a circle and count around, each child saying the next number in the sequence. Start counting at one, pupil who says number 12 sits down. Keep going until only one child is standing. (could vary this use shorter/longer sequences, use different starting/finishing points, do it backwards)
- **Counting Choir**: Divide class into 3 groups. Teacher in role of conductor with baton. T begins to count and then points baton at one group to continue to count in unison. T then points to different group and continues.