Poplar Street Primary School 

*Maths* Calculation Policy, Nursery

The following pages show the principles of *Maths* delivery within our Nursery provision which have been based on NCETM principles, using Numberblocks as the main teaching resource. There is a consistent use of the CPA (concrete, pictorial, abstract) approach throughout that helps children develop mastery across all the operations in an efficient and reliable way. In Nursery, children focus on concrete and pictorial representations. At this stage, children will learn how to represent objects in different ways e.g. understanding that 3 cars can also be represented as 3 counters, 3 cubes, 3 pictures of cars etc.

Counting Principles

Counting Principles that should be explored, taught and represented throughout the school year:

1. The one - one principle: this involves children assigning one number name to each objects that is being counted. Children need to ensure that they count each object that is being counted only once ensuring that they have counted every object. Once they have counted all the objects they need to know that that is the set. Encourage children to say the full amount each time they count e.g. ‘One, Two, Three, I have 3 altogether.’ Children will sometimes count objects more than once or miss an object out that needs to be counted. Encourage children to line up objects and touch each one as they count saying one number name for each object. This will also avoid children counting more quickly than they touch the objects which again shows that they have not grasped on one correspondence. When counting pictures children should use the strategy of drawing a line through each picture as they count it. Children should be taught number names through number songs and general counting*. (When doing this through song daily children should begin to recite numbers to 10 to help with the EYFS statement.)*

2. The stable order principle: children understand when counting that the numbers have to be said in a certain order. Children need to know all the number names for the amount in the group they are counting. Teachers can therefore encourage children to count aloud to larger numbers without expecting them to count that number of objects immediately. The order of numbers should be reinforced through number songs and daily counting activities. *(When doing this through song daily children should begin to recite numbers to 10 to help with the EYFS statement.)*

3.The cardinal principle: children understand that the number name assigned to the final object in a group is the total number of objects in that group. In order to grasp this principle, children need to understand the one -one and stable order principles. From a larger group, children select a given number and count them out. When asked ‘how many?’ children should be able to recall the final number they said. Children who have not grasped this principle will recount the whole group again*. (When using numbers in the nursery environment children should be encouraged to count sets. Label up different areas with the number of objects, people in the area etc. to provide children with opportunities to count amounts/sets independently.)*

4.The abstraction principle: this involves children understanding that anything can be counted including things that cannot be touched including sounds and movements. When starting to count many children rely on touching the objects in order to count accurately. Teachers can encourage abstract counting on a daily basis by counting claps or clicks. *(The abstract principle should feature at least once a day in the nursery environment. Build it into your morning routines and try to feature it in lessons as often as possible.)*

5.The order irrelevance principle: this involves children understanding that the order we count a group of objects is irrelevant No matter which way we count the set the number remains the same. Encourage children to count objects left to right, right to left, top to bottom, bottom to top. Once children have counted a group, move the objects and ask children how many there are. If they count them all again they have not fully grasped this principle. *(This needs to be modelled by the teacher as often as possible to reinforce the idea of order irrelevance. This should feature in any counting activity that is teacher led. To ensure that children grasp this principle they must be exposed to different number arrays so they get used to seeing numbers represented in different ways.)*

Daily Skills

*Maths should not only be taught during specific maths sessions but wherever possible throughout the day. The following should be utilised to support maths teaching:*

* Days of the week song and talking about the day.
* General counting e.g. Counting how many bananas there are in the fruit box.
* Counting songs e.g. ‘5 little ducks went swimming one day’ ’10 green bottles’
* Use of ordinal numbers e.g. “Sam line up first, Lilly line up second...” This language should become part of the teachers and the children’s everyday language and used as often as possible.
* Use of positional language e.g. ‘Can you put the fruit bowl on the table?’ ‘Can you stand behind the chair’ This language should become part of the teachers and the children’s everyday language and used as often as possible
* Games independently accessed or organised by an adult should include a counting, adding or a subtracting element.
* Noticing maths in the environment e.g. Asking children what they notice about a tree. They may say it is tall, has circles on etc.
* Incorporating maths in areas of continuous provision wherever possible e.g. An activity that matches numeral to quantity in the finger gym area, search for set amount of items in the sand area etc.
* Incorporating maths in daily routines e.g. During registration time, if there are 3 children absent the children clap 3 times. Having labels on pencil pots with a representation of a number should be used in the nursery environment to show how many pencils go in that pot during tidy up time or how many children can play in that area.
* Different representations of number around the nursery environment, do not just use digits or the same representations. *(See key images for different ways to represent numbers)*
* Encourage children to answer math questions when singing or reading ask questions e.g. ‘What number will come next?’ ‘How many will we have now.’ ‘Can you show me that number on your hands?’
* Numbers used as labels in the Nursery environment to highlight sometimes numbers are used as labels and have no value e.g. Using numbers to label tables and instructing children to go to table 3.
* Visual timetable display board should be used daily at both AM and PM session. Using ordinal words e.g. First we will, next we will.
* Encourage children to notice where possible shape is the environment and use the language of shape when giving out instructions e.g. Can we go and sit in a circle, a big round circle.
* Encourage children to think about what is the same and what is different about the numbers they are exploring.

The 6 key areas that underpin children’s developing Mathematical journey.

*Along with the counting principles and daily skills, teachers in the nursery environment must be aware of the 6 key areas that underpin children’s learning. When planning and delivering lessons, where possible, children need to be given as many opportunities to develop all areas. This is again must be shown in continuous or adult led provision. The 6 areas should, where possible, interlink with one another so children begin to develop a firm understanding of mathematical areas.*

* [**Cardinality and Counting**](https://www.ncetm.org.uk/resources/52502)**:** understanding that the cardinal value of a number refers to the quantity, or ‘howmanyness’ of things it represents.
* [**Comparison**](https://www.ncetm.org.uk/resources/52501)**:** understanding that comparing numbers involves knowing which numbers are worth more or less than each other.
* [**Composition**](https://www.ncetm.org.uk/resources/52503)**:** understanding that one number can be made up from (composed from) two or more smaller numbers.
* [**Pattern**](https://www.ncetm.org.uk/resources/52504)**:** looking for and finding patterns helps children notice and understand mathematical relationships. *What is the same, what is different?*
* [**Shape and Space**](https://www.ncetm.org.uk/resources/52505)**:** understanding what happens when shapes move, or combine with other shapes, helps develop wider mathematical thinking.
* [**Measures**](https://www.ncetm.org.uk/resources/52506)**:** comparing different aspects such as length, weight and volume, as a preliminary to using units to compare later.

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| Key Vocabulary. The following maths words should be used regularly in children’s play and displayed on the Maths wall when appropriate. So, that the children have a context in which to interpret them. |
| Comparing Words | Small and large, tall and short, fast and slow, heavy and light, hot and cold, high and low, near and far, young and old.*It is helpful for children to see differences and a variety of properties in objects and situations. These must all be first-hand experiences such as comparing weight by handling objects and comparing height or speed through outdoor climbing or running activities.* |
| Positional Words | In, out, next to, behind, in front of, over, under, between, round, through.*Children need a range of positional words if they are to explore shape and space meaningfully. Again these words need to be used during active learning using construction materials or playing hide and seek games.* |
| Directional Words | Forward, backward, up, down, left, right, straight on*Any outdoor activity uses directional words especially if using wheeled vehicles or programmable toys.* |
| Ordinal Words | First, last, second, third, in front of, end, beginning, before, after*These words give children ways of describing order and sequence. Opportunities occur during activities that include lining up objects such as small cars, farm animals and counters.* |
| Shape Words | Round, curved, wavy, straight, sloping, corners, pointed, sides, flat, circle, square, triangle*Children will gradually get to know names of shapes, but more importantly they need to know words that help them describe the shapes of things.* |
| Calculating Words | More, less, the same, many, lots, fewer, greater than, more than, less than*Children’s first understanding of ‘calculating’ will be the vocabulary of more and less, and the language of increasing and diminishing quantities.* |
| Time Words | Today, tomorrow, yesterday, morning, afternoon, night, the days of the week*Young children find time a difficult concept to understand and one that develops as the child matures. Initially, the words they use are mostly related to the here and now. Using a calendar to mark events and a group diary to record happenings will help children develop their sense of time. It is useful when talking about how many days to talk about how many ‘sleeps’ till your birthday*. |

Key Images, Structures and Representations.







