

## Nursery Mathematics Scheme of Learning/ Long Term Plan

### 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
- Use of ordinal numbers e.g. “Sam line up first, Lilly line up second...”
- Maths games such as track counting games
- 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.
- 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 to show how many pencils go in that pot during tidy up time. Different representations of number on the ‘how many children can play here’ posters.

## Key language

<b>Cardinal</b>	The number that identifies how many there are in a set
<b>Numeral</b>	The written symbol for a number e.g. 1, 2, 3
<b>Subitising</b>	Instantly recognise a small quantity without having to count how many there are.
<b>More and fewer; more than and fewer than</b>	Used when talking about an amount of objects
<b>More and less; more than and less than</b>	Used when talking about the number e.g. 2 is less than 4.

## Key representations

<b>Five Frames</b>	
<b>Numicon</b>	
<b>Fingers</b>	
<b>Dice</b>	
<b>Cubes</b>	
<b>Numerals</b>	
<b>Real life objects</b>	
<b>Number Blocks</b>	
<b>Drawing</b>	

## Autumn Overview

<b>Geometry</b>	Recognising, naming and matching colours
	Sorting by various attributes
	Continuing AB patterns

<b>Measurement</b>	Using the language of size
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<b>Number &amp; Place Value</b>	Grasping the Counting Principles
	Comparing amounts of objects

## Guidance

### Autumn 1

<b>Colours (2 weeks)</b>	Recognising, naming and matching colours
<b>Sorting (2 weeks)</b>	Sorting by various attributes
<b>Pattern (2 weeks)</b>	Continuing AB patterns

### **Recognising and naming colours**

Children should be taught to recognise and name colours in a variety of contexts e.g. toys within the classroom, colours in nature, colours in the environment, matching colours, colours on themselves such as hair, skin, clothes. Children should be able to say when objects are and are not the same colour. Link to expressive art and design through painting.

#### **Other resources**

The Usborne Big Book of Colours

Monsters Love Colors – Mike Austin

**Key Vocabulary:** notice, match, same, colour

### **Sorting**

There should be a focus on reasoning within sorting i.e how have you sorted the animals/button etc? Children should be given the opportunity to sort the objects by their own rules and should be taught how to communicate that rule (e.g. I have sorted the buttons by colour). This should be explored in many different contexts such as shapes, different coloured and size objects, different animals, objects found in the environment, appearance of various objects and people. Children

should be taught to verbalise what is the same and what is different between sets of objects (e.g. these buttons are pink and these buttons are blue/ they are boys and they are girls). Links can be made to Understanding of the World



### Other resources

Sort it Out! – Barbara Mariconda

Sorting at the market – Tracey Steffora

**Key Vocabulary:** sort, notice, groups, sets, same, different

## Pattern

Developing an awareness of pattern helps children to notice and understand mathematical relationships. Children should initially be taught to continue an AB pattern. Children need the opportunity to see a pattern, talk about what they can see and to continue a pattern. At first they may do this one object at a time e.g red cube, blue cube, red cube... verbalising the pattern helps. Children may then be asked to say what they would add next to continue it. For further progression in Pattern see **NCETM Early Years Typical Progression Chart – Pattern**.

### Other resources

Pattern Fish – Trudy Harris

Lots and lots of Zebra Stripes – Stephen R. Swinburne

<https://nrich.maths.org/13250>

**Key Vocabulary:** pattern, continue, notice, next

## Autumn 2

<b>Size (1 week)</b>	Using the language of size
<b>Counting Principles (2 weeks)</b>	One-one principles, stable-order principle, cardinal principle, abstraction principle, order-irrelevance principle
<b>Comparing (2 weeks)</b>	Comparing amount of objects

## Size

At this stage only focus on large/big and small/little. Use real life examples of objects that are large and small in relation to each other. Begin with objects that are vastly larger/smaller than each other and move onto objects with a smaller difference in size. Include reasoning e.g. 'do you think this large tree would fit into my small box?'

### Other resources

Big Bear, Small Mouse – Karma Wilson & Jane Chapman

**Key Vocabulary:** notice, big, large, small, little  
The \_\_\_\_\_ is smaller/larger than the \_\_\_\_\_.

## Counting principles

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 objects that is being counted only once ensuring that they have counted every object. 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 one-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.
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.
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.
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 abstraction on a daily basis by counting claps or clicks.
5. **The order-irrelevance principle** – this involves children understanding that the order we count a group of objects is irrelevant. There will still be the same number. 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.

### Other resources

NCETM Early Years Typical Progression Chart – Cardinality and Counting

Anno’s Counting Book – M Anno

The Very Hungry Caterpillar – Eric Carle

**Key vocabulary:** count, how many, total, altogether, cardinal number  
The cardinal number is \_\_\_\_\_.

## Comparing

Children need progressive experiences where they can compare collections and begin to talk about which group has more things. When talking about amounts of objects use the language of more and fewer. Children should initially be taught perceptual comparing (comparing without counting). Initially the groups need to be very obviously different (e.g 2 objects and 7 objects). Move on to collection of small numbers of objects that are similar (e.g 1 and 3 objects) and then

move onto different items but same quantity (using language of same or equal). For further progression in comparing **see NCETM Early Years Typical Progression Chart – Comparison.**



**Key vocabulary:** compare, more, fewer, same, equal

There are more \_\_\_\_\_ than \_\_\_\_\_ / there are fewer \_\_\_\_\_ than \_\_\_\_\_.

## Spring Overview

<b>Number &amp; Place Value</b>	Understanding Number 1
	Understanding Number 2
	Understanding Number 3
	Understanding Number 4
	Understanding Number 5
	Understanding Number 6

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## Guidance

### Spring 1

<b>Number One</b>	Exploring and understanding number 1
<b>Number Two</b>	Exploring and understanding number 2
<b>Number Three</b>	Exploring and understanding number 3

When teaching numbers to 6 consider the counting principles at all times. Wherever possible, ensure that children are counting real-life objects. They could start by counting objects that are identical before moving on to counting objects that have slight difference e.g. different colours, different sizes, but make sure that the objects are of the same type. Encourage children to put objects in a line when counting so they have a clear start and end point. The five frame can be used to support children in lining up objects to count. It will also support children to subitise numbers within 5. Numerals may be introduced to children but they are not expected to write them at this stage. They could use drawings to represent their numbers.

### **Number 1**

Throughout the 2 weeks the following should be explored:

- Number blocks episode 1
- Counting to 1
- Finding 1 object

- 1 being the first number, its position on a number line, ordinal numbers
- Numicon 1
- Dice 1
- Subitising 1
- Representing 1 on a 5 frame
- A circle – 1 sides shape (including in the environment)
- 1 action e.g. 1 hop, 1 jump, 1 clap
- The numeral and formation of 1
- Number 1 in the environment
- Representing 1 using marks, pictures and finger
- Matching numeral to quantity

## Number 2

As above but also focus on what 2 is made of (1 is a part of me, 1 is a part of me and the whole of me is 2). **Note:** do not introduce children to addition or number sentences until Reception. Also look at separating the group of objects but knowing that the total is the same.

## Number 3

As above (2 is a part of me, 1 is a part of me and the whole of me is 3). Exploring different varieties and orientations of triangles.

### Other resources

<https://nrich.maths.org/13372>

Number Blocks Series 1: One; Series 1: 2; Series 1: 3; Series 1: One, Two, Three!

The Three Little Pigs

The Three Billy Goats Gruff

Goldilocks and the Three Bears

**Key vocabulary:** number, numeral, subitise, represent, how many, count, cardinal, first/second/third etc

## Spring 2

<b>Number Four</b>	Exploring and understanding number 4
<b>Number Five</b>	Exploring and understanding number 5
<b>Number Six</b>	Exploring and understanding number 6

## Number 4

Throughout the 2 weeks the following should be explored:

- Number blocks episode 4
- Counting to 4
- Finding 4 objects
- its position on a number line, ordinal numbers
- Numicon 4
- Dice 4
- Subitising 4

- Representing 4 on a 5 frame
- Squares and rectangles, including in the environment
- 4 actions e.g. 4 hops, 4 jumps, 4 claps
- The numeral and formation of 4
- Number 4 in the environment
- Representing 4 using marks, pictures and finger
- Matching numeral to quantity
- Composition of 4 (2 is a part of me, 2 is a part of me and the whole of me is 4; 3 is a part of me, 1 is a part of me and the whole of me is 4)

## Number 5

As above (3 is a part of me, 2 is a part of me; 4 is a part of me, 1 is a part of me)

## Number 6

As above (3 is a part of me, 3 is a part of me; 4 is a part of me 2, 2 is a part of me, 5 is a part of me 1 is a part of me). Explain 6 as being 5 and 1 more.

### Other Resources

Sesame Street: Feist sings 1, 2, 3, 4 <https://www.youtube.com/watch?v=fZ9WiuJPnNA>

Number Blocks Series 1: Four; Series 1: 5; Series 1: 6; Series 1: How to Count; Series 1: The Whole of Me

**Key vocabulary:** number, numeral, subitise, represent, how many, count, cardinal, first/second/third etc

## Summer Overview

<b>Shape &amp; Space</b>	Shapes
<b>Measurement</b>	Ordering the events of our day
	Length and Height
	Weight
	Capacity
<b>Shape &amp; Space</b>	Positional Language

# Guidance

## Summer 1

<b>Shapes</b>	Focus on properties of shapes
<b>My Day</b>	Ordering events of the day
<b>Length and height</b>	Long, short, tall and comparing lengths

### Shapes

The primary focus in relation shapes should be on the properties of shapes. For example, children should be encouraged to notice and describe shapes in the environment and talk about the properties using words such as 'straight/flat/round/curved'. When teaching the names of shapes, wherever possible, real life shapes in the environment should be used. Note that only flat surfaces should be referred to as faces. Include sorting of natural shapes; the children may sort stones, for example, into sets that have straight edges, sets that have curved edges etc.

#### Other Resources

NCETM Early Years Typical Progression Chart –Shape and Space

<https://nrich.maths.org/13373>

**Key vocabulary:** edge, curve, straight, round, flat, sides, face, corner, smooth **Note: This is for staff to model.**

### My Day

Children should explore talking about and ordering the events of their day such as waking up, coming to school, dinner, bed time. Encourage the vocabulary of first, next, then and possibly last.

**Key vocabulary:** first, next, then, last

### Length and height

In the first stage children should be able to apply the attribute of long, short, tall etc to various examples (e.g. a bus is long; an adult is tall; grass is short). Adults should be continuously modelling this language. The children should then move on to finding objects that are longer/shorter than a given item. They should be encouraged to utilise strategies such as direct comparison (e.g. placing objects side by side to determine which is longer). When comparing length and height verbally children should be encouraged to use language such as 'taller than/longer than/shorter than'. When comparing lengths directly children need to ensure that they align the starting points and compare like-for-like (e.g. straightening skipping ropes before comparing lengths).

#### Other Resources

NCETM Early Years Typical Progression Chart – Measures

Key vocabulary: long, short, tall, longer than, shorter than, taller than  
The \_\_\_\_\_ is longer/shorter/taller than the \_\_\_\_\_.

## Summer 2

<b>Weight</b>	Light and heavy and comparison
<b>Capacity</b>	Full, half full, empty and comparison
<b>Positional language</b>	Using language related to position and direction

## Weight

Initially begin with identifying objects the children think may be heavy – use lots of adult modelled language. Move on to comparing weights. One way to identify this is to identify that a heavier object creates a greater downwards pull. Ask children to hold a carrier bag; encourage them to notice if it feels as though their hand is being pulled down when something heavy is put in it. Place a carrier bag in each hand and identify which one is heavier by discussing which arm feels more pulled down. Explore the link to the balance scales to show that the heavier side goes down. Exemplify this with a see-saw ‘What can we do to make this side of the see-saw go down?’. Ensure that children are presented with large but light objects and small but heavy objects to prevent the generalisation that big means heavy and small means light.

### Other Resources

NCETM Early Years Typical Progression Chart – Measures

<https://nrich.maths.org/13374>

**Key vocabulary:** Heavy, heavier than, light, lighter than, balanced  
The \_\_\_\_\_ is heavier than/lighter than the \_\_\_\_\_.

## Capacity

Children should be given daily opportunity for sand and water play which can provide lots of opportunities to explore capacity. Children should be able to identify when a container is empty and full, and extend to half full. Initially children should be exposed to the comparison of full, half full, empty using the same container. However this can be moved on by talking about different size containers (e.g. I wonder whose pot will hold the most water?’ When comparing capacities directly children can pour from one container to another to find which holds more or less water.

### Other Resources

NCETM Early Years Typical Progression Chart – Measures

<https://nrich.maths.org/13374>

**Key vocabulary:** full, half full, empty, most, least  
The container is full/half full/empty. The \_\_\_\_\_ holds the most/least water.



## Positional language

Children need opportunities to be exposed to and to use the language of position and direction.  
*Position: 'in', 'on', 'under'. Direction: 'up', 'down', 'across'*

Children also need opportunities to use terms which are relative: *'in front of', 'behind', 'on top of'*.

Create as many opportunities as possible to explore this language such as hunting for hidden objects with some prompts (e.g. look behind the shed).

### Other Resources

NCETM Early Years Typical Progression Chart – Shape and Space

<https://nrich.maths.org/13373>

**Key vocabulary:** in, on, under, up, down, across, in front of, behind, on top of.

The \_\_\_\_\_ is (*position*) the \_\_\_\_\_.