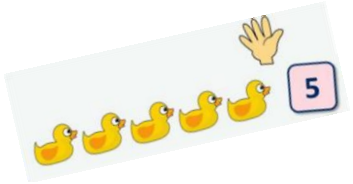
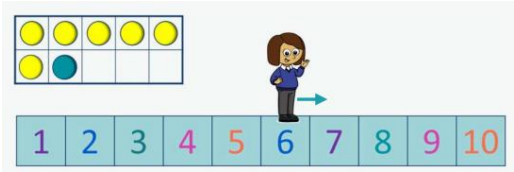
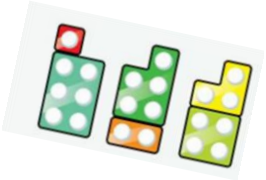
Mathematics Teaching and Learning at Menston Primary School







Reception

Throughout Reception, mathematics is taught through a blend of adult-led learning and high-quality continuous provision. Children are encouraged to apply their developing understanding in play, problem-solving contexts and everyday routines such as counting for transitions or exploring number in the environment. Teachers also ensure that the counting principles are taught explicitly and revisited often, supporting children in developing secure, confident early number skills.

1 The one-to-one principle.

This involves children assigning one number name to each object that is being counted. Children need to ensure that they count each object only once, ensuring they have counted every object.

2 The stable-order principle.

Children understand that, when counting, the numbers have to be said in a certain order.

3 The cardinal principle.

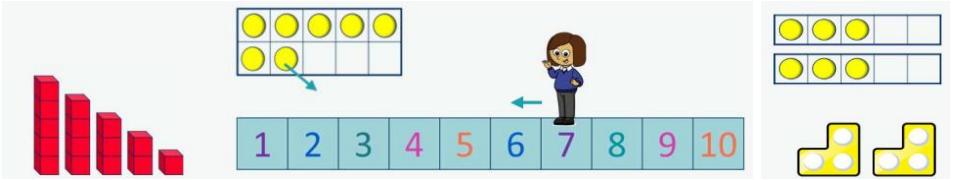
Children understand that the number name assigned to the final object in a group is the total number of objects in that group.

4 The abstraction principle.

This involves children understanding that anything can be counted, including things that cannot be touched, such as sounds and movements e.g. jumps.

5 The order-irrelevance principle.

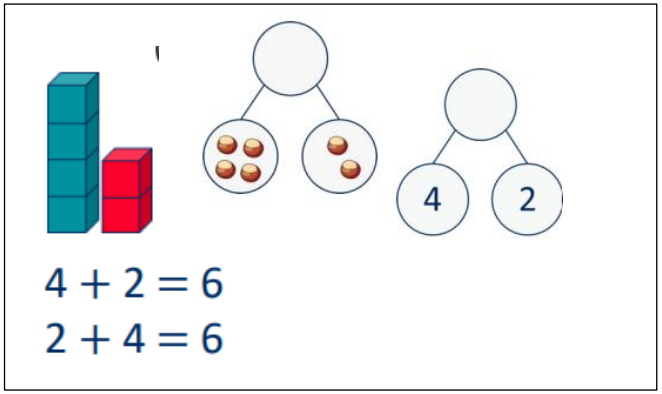
This involves children understanding that the order in which we count a group of objects is irrelevant. There will still be the same number.



Concrete:
Teaching begins with practical, hands-on experiences using real objects. Children explore number, shape, pattern, and measure through manipulatives such as counters, natural materials, cubes, and everyday classroom items. These concrete resources allow children to physically handle quantities, compare amounts, and build early compositions of number. This stage forms the basis of their understanding and supports them in making meaning from mathematical ideas.

Pictorial:
Once children are secure with concrete experiences, they are encouraged to represent their thinking through images, drawings, and simple marks. This may include dots, tally marks, sketches of objects, or simple diagrams. The shift to pictorial representation helps children make connections between physical quantities and visual models, enabling them to internalise and communicate mathematical concepts with increasing independence.

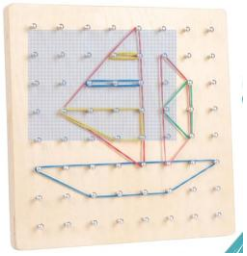
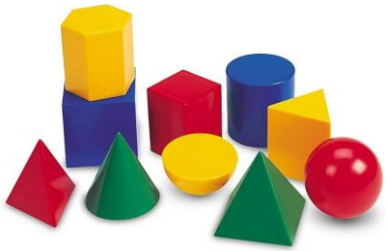
Abstract:
As children become confident with both concrete and pictorial forms, they are gradually introduced to more abstract representations such as numerals and mathematical symbols. This includes recognising, writing, and using numbers, as well as beginning to apply symbols like '+', '–', and '='. Abstract understanding is built carefully and only when children are ready, ensuring they can link symbols to real and meaningful mathematical experiences.



Concrete Resources for maths teaching in Reception

Concrete Resource		What it can be used for	How the resource is used
Double-sided counters		conservation of number; counting; sorting; patterns	Drop a small number of counters. How many are one colour? How many are the other colour? The whole is the amount you have dropped. Rearrange the counters so that they are easy to subitise.
Rekenreks and bead strings to 10		One more and one fewer bead; part-whole of amounts	Rehearse that there are 5 beads of one colour and 5 of the other colour in each row. Practise subitising an amount by placing a finger on that number and sliding across without counting each bead in ones.
Unifix cubes and Multilinking cubes		towers; groups; patterns; comparison; counting; making Numberblock characters	Put amounts in towers like a staircase to discuss one more/one fewer cube.
Dice and dominoes		dotty dice (up to six spots); blank dice for teachers to make own images; ten faced dice with 0-9 – (games)	Recognise and represent the domino and dice patterns. Use them to learn and rehearse number bonds and doubles. Use blank dice and draw dots for 1,1,2,2,3,3 on them for subitising up to 3 for children not yet ready for 4-6.

Peg boards and pegs		arrays and patterns.	Place the pegs into the boards and talk about how many rows and how many columns and that the ‘arrays’ have the shape of rectangles.
Subitising items like plates		preparation for understanding how base ten works.	Patterns on plates that show that amounts can be made by combining other amounts. That amounts can be the ‘whole’ and ‘parts’ and that no matter how an amount is arranged, if nothing is taken away or added then the total remains the same (conservation of number).
Play coins		1p to pay for items in snack and to ‘play with’ in role play area.	1p pieces can be used instead of counters to find amounts and ‘pay’ for items – beginning to understand the concept of transaction.
Tens frames		counting, addition, subtraction, number bonds, understanding numbers to 10, subitising, one more/less.	Used with counters, pieces of playdoh or small maths toys.

Numicon		Counting, addition, subtracting, number bonds, odds and evens, ordering, matching to numerals, number patterns, are visual representations of numbers.	Can be used alongside Numicon boards and pegs, in playdoh or with paint, to make representations of Numberblocks, to add or subtract, to make number bonds.
Counting toys		Counting, sorting by different characteristics, pattern making, number bonds, addition, subtraction.	Can be used with hoops to support sorting, to count and match to numerals, to add and subtract.
Geoboards and elastic bands		Making and discussing 2D shapes, understanding shape properties, pattern making, fine motor skills development.	Used to explore 2D shape, to make different shapes and patterns.
3D shapes		Discussion of properties of 3D shapes, developing shape language (e.g. curved/straight/face).	Used to spark discussion about 3D shapes, to build with, make patterns and draw around.

At Menston Primary School, we teach daily maths lessons in Reception through the **Mastering Number programme**, supported and enhanced by other **NCETM** resources. Below is an overview of the Mastering Number programme for Reception. We also teach shape, space and measure (including pattern) in a progressive way.

MATHSHUBS

NCETM
NATIONAL CENTRE FOR EXCELLENCE IN THE TEACHING OF MATHEMATICS

Mastering Number

Reception Overview

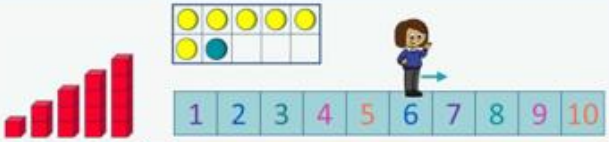
Term 1	Term 2	Term 3
Pupils will build on previous experiences of number from their home and nursery environments, and further develop their subitising and counting skills. They will explore the composition of numbers within 5. They will begin to compare sets of objects and use the language of comparison. **Pupils will:** • identify when a set can be subitised and when counting is needed • subitise different arrangements, both unstructured and structured, including using the Hungarian number frame • make different arrangements of numbers within 5 and talk about what they can see, to develop their conceptual subitising skills • spot smaller numbers 'hiding' inside larger numbers	Pupils will continue to develop their subitising and counting skills and explore the composition of numbers within and beyond 5. They will begin to identify when two sets are equal or unequal and connect two equal groups to doubles. They will begin to connect quantities to numerals. **Pupils will:** • continue to develop their subitising skills for numbers within and beyond 5, and increasingly connect quantities to numerals • begin to identify missing parts for numbers within 5 • explore the structure of the numbers 6 and 7 as '5 and a bit' and connect this to finger patterns and the Hungarian number frame • focus on equal and unequal groups when comparing numbers	Pupils will consolidate their counting skills, counting to larger numbers and developing a wider range of counting strategies. They will secure knowledge of number facts through varied practice. **Pupils will:** • continue to develop their counting skills, counting larger sets as well as counting actions and sounds • explore a range of representations of numbers, including the 10-frame, and see how doubles can be arranged in a 10-frame • compare quantities and numbers, including sets of objects which have different attributes • continue to develop a sense of magnitude, e.g. knowing that 8 is quite a lot more than 2, but 4 is only a little bit more than 2

• connect quantities and numbers to finger patterns and explore different ways of representing numbers on their fingers • hear and join in with the counting sequence, and connect this to the 'staircase' pattern of the counting numbers, seeing that each number is made of one more than the previous number • develop counting skills and knowledge, including: that the last number in the count tells us 'how many' (cardinality); to be accurate in counting, each thing must be counted once and once only and in any order; the need for 1:1 correspondence; understanding that anything can be counted, including actions and sounds • compare sets of objects by matching • begin to develop the language of 'whole' when talking about objects which have parts	• understand that two equal groups can be called a 'double' and connect this to finger patterns • sort odd and even numbers according to their 'shape' • continue to develop their understanding of the counting sequence and link cardinality and ordinality through the 'staircase' pattern • order numbers and play track games • join in with verbal counts beyond 20, hearing the repeated pattern within the counting numbers	• begin to generalise about 'one more than' and 'one less than' numbers within 10 • continue to identify when sets can be subitised and when counting is necessary • develop conceptual subitising skills including when using a rekenrek

The Mastering Number programme uses videos, models and images from **Numberblocks** to gently introduce concepts of number to support early mathematical understanding.

This overview of skills from the White Rose Maths calculation policy illustrates some of the progression steps that children take towards the end of Reception Early Learning Goals for Number and Numerical Patterns.

Addition:

Progression of skills	Key representations	
Conceptually subitise to 5 Notice the parts that make up the whole.	What do you see? How do you see it?	
1 more Continue to link to stories, songs and rhymes.	1 more than … is …	
Notice the composition of numbers within 10 Link to stories, songs and rhymes.	How many…? How many…? How many altogether?	How many ways can you make…?
Combine 2 groups 2 groups are combined to find the total.	There are …. There are …. There are …. altogether.	…. and …. make ….
Add more A quantity is increased.	First… Then…. Now….	I have …. I add …. more. Now I have….

Early Learning Goal for Number

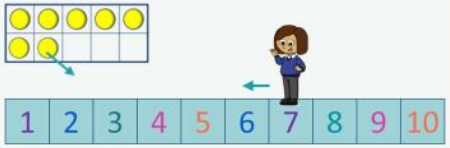
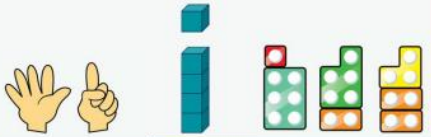
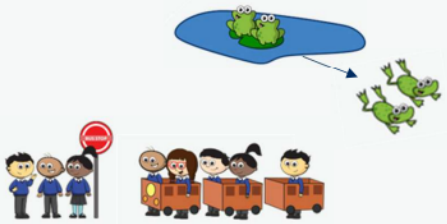
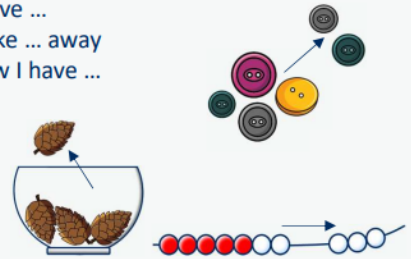
Children at the expected level of development at the end of Reception will:

Have a deep understanding of number to 10, including the composition of each number;

Subitise (recognise quantities without counting) up to 5;

Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts.

Subtraction:

Progression of skills	Key representations	
Conceptually subitise to 5 Notice the parts that make up the whole.	What do you see? How do you see it? 	
1 less Continue to link to stories, songs and rhymes.	1 less than … is … 	
Notice the composition of numbers within 10 Link to stories, songs and rhymes.	How many…? How many…? How many altogether? 	How many ways can you make…? 
Partition Using objects, explore different ways to partition a number into 2 or more parts.	There are … altogether. I can see … here and … there. 	… and … make … 
Take away A quantity is reduced.	First… Then… Now… 	I have … I take … away Now I have … 

Early Learning Goal for Numerical Patterns

Children at the expected level of development at the end of Reception will:

Verbally count beyond 20, recognising the pattern of the counting system; -

Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity; -

Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.

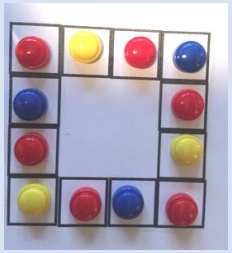
Multiplication:

Progression of skills	Key representations
Double to 10 Prompt children to notice that double means twice as many and to notice that there are two equal groups.	Double … is … … is double …
Make equal groups Provide opportunities to make equal groups when tidying up or during snack time. Encourage children to check that each group has the same amount.	There are … groups of … There are … altogether.

Division:

Progression of skills	Key representations
Sharing Provide practical activities such as sharing items during snack time. Encourage children to check whether items have been shared fairly (equally).	There are … altogether. They are shared equally between … groups.
Grouping Provide opportunities to make equal groups when tidying up or during snack time. Encourage children to check that each group has the same amount.	There are … groups of … There are … altogether.

Although there is no Early Learning Goal for geometry, capacity and measures, we use NCETM resources to ensure that children experience these important mathematical concepts in practical ways.



Mathematics learning in Reception is enhanced by a wide variety of stories songs and rhymes.