

A developmental progression that provides a coherent framework to support the teaching of early maths. It is ambitious and detailed, cross referenced to Statutory Framework for Early Years Foundation Stage and bodies of key research. It builds in developmental milestones to move pupils from one stage to the next.

Early Maths Progression



Our belief

We believe that the best teachers of maths not only have great pedagogical knowledge but also have excellent subject knowledge.

“The most effective teachers have deep knowledge of the subjects they teach, and when teachers’ knowledge falls below a certain level it is a significant impediment to students’ learning. As well as a strong understanding of the material being taught, teachers must also understand the ways students think about the content, be able to evaluate the thinking behind students’ own methods and identify students’ common misconceptions.”

From Sutton Trust report “What makes great teaching” (2014)

We believe that all children can achieve in maths and that the emphasis on effort and growth mindset is paramount.

Introduction

In order to create high achievement in maths, we set the foundations by having a key focus on ensuring that all pupils develop a deep understanding of the numbers to 10, the relationships between them and the patterns within those numbers. We ensure that pupils have frequent and varied opportunities to build and apply this understanding within reasoning and problem-solving activities. We focus on developing positive attitudes and interest in mathematics, for example looking for patterns and relationships, spotting connections, ‘having a go’, talking about what they notice and not be afraid to make mistakes. We endeavour to have all pupils develop confident mathematical knowledge to ensure that they are Key Stage 1 ready.

Number Sense

To become mathematically literate, children need to develop number fluency. This is called number sense. Number sense is important because it helps children understand the cardinal and ordinal aspect of number, improves their performance of mental mathematics, and gives them the tools to look at maths in the outside world and make comparisons. This starts in preschool and reception where children spend time understanding what a number represents. E.g. 1 is 1 thing.

Good number sense helps children manipulate numbers to make calculations easier and gives them the confidence to be flexible in their approach to solving problems. Number sense develops over time through opportunities to explore and play with numbers. Visualising numbers in different contexts, spotting relationships between numbers and predicting the patterns all contribute to good number sense.

Number fluency is not a fixed ability: it can grow and develop through frequent opportunities to practise effective strategies. Children will be able to not only perceptually subitise, but also conceptually subitise numbers from 1-10 by providing children with a variation of representation.

Pre School

Developmental Milestones

Feniton Pre School has a two cohort intake. Staff are looking for first year three year olds to be mastering milestones 1 – 3 and then 4 year olds to be mastering milestones 4 – 6. However, we are responsive to each individual pupil's needs and focus on where they are in their stage of development.

Milestone 1	Milestone 2	Milestone 3	Milestone 4	Milestone 5	Milestone 6
Understand positional language, with pointing Represent 1 with finger Start to join in with number rhymes/songs	Join in with counting to 5 Identify which group has more or fewer when asked	Understand positional language with no pointing Represent 1,2,3 with fingers with support Compare numbers of objects using 'lots' Use some size language Use some shape language eg names or descriptions	Subitise 1 and 2 objects Use positional language	Perceptually subitise 3 objects Represent numbers to 3 with fingers	Count to 5 Count 3 objects Subitise small groups (1,2,3) of larger number Know some number rhymes/ songs Uses size language Uses shape language

Pre - School

Domains of Knowledge and Small Step Progression of Experiences

	Autumn term	Spring term	Summer term
Counting	Counting forwards to 5 (Join in with counting to 5) Counting in the style of ping pong, throwing and catching a bean bag, rolling a large ball. Adult pretends to forget next number)	Counting forwards to 5	Count forwards to 10 Count backwards from 10, once secure forwards. (Blast off!) Ordinality eg first, second, last when lining up, in story context what happened first or who was first?
Counting objects	Count sets of objects given to them. (1-3) STEM sentence: 1, 2. There are 2 xxx Counting sets of objects from a larger set. Can you give me? Can you find me? (1 and 2 only) Counting mixed sets of objects (1-3)	Count sets of objects given to them. (1-3) STEM sentence: 1, 2. There are 2. (using careful counting strategies eg 1:1 correspondence, saying one number name for each item, know the last number reached when counting is the total number in the set) Counting sets of objects, up to 3, from a larger set. Can you give me? Can you find me?	Counting actions, moving objects (cars in a video), count things that can't be moved (trees in the park) – do 2 hops, do 3 jumps, sounds (clean sound, drum beat). If ready count sets of objects given to them with up to 5 items.
Number blocks		Number blocks, Episode 1 – 7 (Numbers 1 – 5)	
Subitising patterns	Perceptual subitising to 3 eg “I can see 2” ‘real world’ or natural objects/photos eg of flowers, apples “What do you see? How do you see it?” NB Keep cognitive load low ie same type of object, size, colour Use ‘maths world’ items eg cubes, counters to subitise Dice patterns to three		Flash cards of real objects (up to 3), what do you see? How do you see it? NB have different arrangements, but low cognitive load Conceptually subitise eg “I know its 3 because I can see a 1 and 2 and I know there is a 1 and a 2 in 3” Dot patterns (up to 3) not in a standard arrangement Use larger numbers of objects but look for groups of 1,2,3 not the total. “I can see a 2 here etc” use finger to show or draw around groups eg with chalk outside Dice patterns to 6 – play dice games

5 frames	Self-registration from Oct half term using 5 frames – talk about what they notice “I can see 2 children are here”. “How many more children do we need to make it full?” “How many spaces can you see?”	5 frames in play within provision Can you put xxx on the 5 frame. (To 3) Roll the dice (To 3) and add counters to the 5 frame. STEM sentence: I can see xx counters.	Flash cards of concept images for 0-3 on 5 frame STEM sentence: I can see xx dots and xx spaces. Using the five frames of vote for favourite things. Which has more? Which has fewer? Match numerals (0 – 3) to 5 frames.
Numicon	Exploration of plates 1 – 5 in provisions: Eg Patterns, fill the board, filling holes Large outdoor numicon	Naming numicon plates (1-3)	Match numerals to numicon plates (1-3) Relative size of numbers – which is more? Which is fewer?
Number representations	Use marks to show number of objects Reference to real life contexts – 1 nose, 2 eyes, 3 bears, 4 legs, ages, 5 fingers, songs	Representing number – roll and dice and record what they saw. Can they represent numbers in different ways eg tally marks or numerals or pictures to record score? Lucy has 3 sweets can you show that.	Recognise different number representations to 3 including numeral, dice, Numicon, five frame, number blocks, finger patterns, big things, small things, where it is on a number track. Invite the children to collect objects up to 3
Finger patterns	Grow me (one at a time, count as you go) (Numbers 1 – 3)	Show me (Put up straight away) (0-3)	Grow me (one at a time, count as you go) for numbers to 5 / Show me (Put up straight away) for numbers 1 – 3)
Comparing and ordering numbers	Vocabulary – Small/big e.g. 1 is a small number – 10 is a big number. Identify a set that has lots or few	Compare quantities using ‘more than’ or ‘fewer than’ Order 1-3	__ is more than __ Estimate how many there might be eg less than 5, more than 5
Addition and subtraction		In play – putting two shapes on top of a numicon shape e.g. 3 and 1 onto 4 Sing songs	In play – putting two shapes on top of a numicon shape e.g. 2 and 1 onto 3 Sing songs Separate a set of 3 in different ways, beginning to recognise that the total is still the same. e.g. ducks in the pond or nest – stories around them.
Songs, rhymes and stories	Counting forwards songs (1-5) To include: 1, 2 Buckle my shoe Share videos, on BBC Schools Radio	Counting forwards songs (1-10) To include: 1, 2, 3, 4, 5 Once I caught a fish alive 10 Little Fingers	Counting backwards songs (5-1) To include: 5 Green bottles 5 Fat sausages 5 in a bed

			<p>5 Little Ducks 5 Little Speckled Frogs 5 Little Men in a flying saucer 5 Little Monkeys BBC Schools Radio – Counting Songs</p>
<p>Measures Time Temperature Speed - vocab throughout</p>	<p>Make comparisons between objects relating to size eg Height- tall/short – taller/shorter Length – long/short – longer/shorter</p>	<p>Capacity – full/not full/empty/nearly full/nearly empty Money in role-play Positional language – on, under, in – with their bodies, toys and pictures</p>	<p>Capacity – holds more than Weight- heavy/light – heavier/lighter Positional – behind, between, next to – with their bodies, toys and pictures. Use positional language to describe a route eg in obstacle course, from story.</p>
<p>Shape and space</p>	<p>Noticing patterns in environment eg stripes or spots on clothes Repeating patterns ie ABAB continuing or making (eg. threading, printing, using objects) Explore and talk about 2d shapes eg straight, curved, side</p>	<p>Spot 2d shapes in the environment eg square (faces on the cube) etc. Shapes in play – drawing around Naming 2D shapes Adults to use vocabulary of 3D shapes in play – sphere, cube, cuboid, cylinder</p>	<p>Explore and talk about 3D shapes – spotting them in the environment, naming them, explore properties when using them eg a cylinder rolls, prism for roof</p>

Pre School

School Readiness Checkpoints

- I can say numbers to 5 (and beyond, where appropriate.)
- I can subitise a group of upto 3 objects and say how many there are.
- I can sing familiar number based songs and rhymes
- I can create/extend a pattern
- I can talk about some common 2D and 3d shapes
- I can compare the length, weight or capacity of different objects

Reception

Domains of Knowledge and Small Step Knowledge Progression

Reception	Autumn A (Numbers to 5)	Autumn B (Numbers to 6)	Spring A (Numbers to 10)	Spring B (Numbers to 10)	Summer A (Numbers to 10)	Summer B (introduce numbers to 20)
Oral counting	Count forwards in 1's to 10 Counting ping pong Count back in 1's from 5 to 0	Count forwards to 10 Counting back from 10 to 0 in 1's Counting ping pong When counting forwards, sometimes start at a number other than 1 or 0.	Count forwards to 20 in 1's Counting ping pong Starting and stopping at a different number	Count forwards to 20 in 1's Counting back from 10 to 0 in 1's Counting ping pong		Counting back from 15 in 1's Counting back from 20 in 1's Counting ping pong Starting and stopping at a different number Count in 10s.
Counting *Children will be encouraged to use subitising (rather than counting)	Make sets of 1,2,3,4 or 5 items. Counting sets of objects given to them using 'careful counting' strategies (0 - 5) ie count each object once, count in any order, 1:1 correspondence, correct number name order Counting sets of objects from a larger set (up to 5 objects) Counting randomly arranged objects (0 - 5), finding ways to keep track of what has been counted Repeat how many things in the set e.g. "1, 2, 3, there are three pencils" Count actions,sounds,claps as well as objects Model using tally marks		Counting sets of 1-10 objects using 'careful counting' strategies Counting sets of objects from a larger set of up to 10 Counting randomly arranged objects up to ten (Repeat how many things in the set e.g. "1, 2,3, there are three pencils") finding ways to keep track of what has been counted Counting objects that aren't always in a line Counting sounds, actions, claps etc Sometime estimate before counting			Counting up to 15 objects Counting sounds, actions, claps etc Counting pictures Estimate with a base quantity such as ten and then say 'do you think there are more than 10, 10, or fewer than 10?', then count to check. Use tally marks eg to keep score

<p>Subitising</p>	<p>Perceptually subitise 1-3 objects/dots/ simple pictures arranged randomly inside and outside, big and small objects but low cognitive load. What do you see? How do you see it? Dice patterns to 3 Represent what they see in counters. Conceptually subitise 2 and 3 ie “I know there’s 2 because I can see a 1 and a 1 and I know there is a 1 and a 1 in 2” (subitise the parts and say the whole)</p>	<p>Perceptually subitise 1-5 objects arranged randomly inside and outside, big and small objects but low cognitive load. What do you see? How do you see it? Dice patterns to 5 Represent what they see in counters. Conceptually subitise to 5 ie “I know there’s 5 because I can see a 2 and a 3 and I know there is a 2 and a 3 in 5” Part; whole ie partitioning numbers into smaller groups</p>	<p>Perceptually subitise 1-6 objects arranged in dice pattern. What do you see? How do you see it? Teach dice patterns to 6 Represent what they see in counters. Conceptually subitise to 5 ie “I know there’s 5 because I can see a 2 and a 3 and I know there is a 2 and a 3 in 5” Part; whole for numbers to 10 ie partitioning numbers into smaller groups NB not just partitioning into 2 groups Equal, unequal groups</p>	<p>Subitise partitioned groups in numbers to 10 Conceptually subitise numbers to 10 in regular (eg dice) patterns ie I know its 10 because I can see a 5 and a 5 Equal and unequal groups</p>	<p>Subitise partitioned groups in numbers to 20 Conceptually subitise numbers to 10 in regular (eg dice) patterns ie I know its 15 because I can see a finished 10 and 5 of the next 10 Equal, unequal groups</p>
<p>Five and ten frames</p>	<p>Five frames Objects onto five frames (counters next to each other initially ie 5’s pattern) Flashcard concept images of five frames ‘I can see ... counters and many spaces’. One more and one less (Add different colour) ‘One more than ... is’, ‘One less than..... is’</p>		<p>Ten Frames Five’s pattern (Fill a row of five before adding any other counters) moving on to two’s pattern (1 on top and 1 on bottom line then next 1 on top etc) ‘I can see the numbers and hiding in the number’) Move it to prove it ‘One more than ... is’, ‘One less than..... is’ Add and subtract single digit numbers (total 10 or below) Doubling and halving Flashcard concept images of ten frames</p>		<p>Two Ten Frames Two ten frames ‘One ten and 6 of the next 10 is ... 16’. Make numbers 10 to 20 in order with tens frames, in and out of order. Add and subtract single digit numbers.</p>

	Order flashcards Match numerals to 5 frames Self registration 'I can see the numbers and hiding in the number ...' Move it to prove it – move counters on and off 5 frame Race to 5 game		Order flashcards Race to 10 game Roll dice – show this amount on 10 frame Odd and even numbers Self registration and lunch registration with ten frames	Race to 20 game Develop awareness of magnitude eg 10 is a lot more than 2 but 4 is only a little bit more than 2
Numicon	Recognising shapes to 3 and making shapes to 3 Fill holes, shape to copy One more and one fewer to 3 Compare '.... is bigger than ...' or '.... is smaller than ...' Order	Recognising shapes to 5 and making shapes to five Fill holes, shape to copy One more and one fewer than to 5. Compare '.... is bigger than ...' or '.... is smaller than ...' Fill the board challenges Explore making number bonds to 5	Use Numicon for numbers 10 One more than, one fewer than to 10 Explore how a number can be made with other Numicon plates eg draw around then find others to fit the shape or use playdough, pushing shape in – which shape made the outline? Can they find 2 other shapes that 'fit' the outline?	Use Numicon for numbers 20 ie "17 is 10 and 7" Sometimes have Numicon with the ten next to the ones and sometimes on top. Doubling and halving with pairs of plates Fill the board challenges Play addition and subtraction with Numicon and dice – fill the board/empty the board.
Finger patterns	Grow me/show me numbers to 5 on one hand Can you show me without counting them? Fastest fingers from behind your back etc ... 'When I show you four I have 4 fingers up and one finger	Grow me/show me numbers to 5 on two hands Show me numbers to 5 on two hands '3 can be 3 and 0 or 2 and 1'.	Grow me/show me numbers to 10 on own or with a partner, explore different combinations of 6,7,8,9 and 10 Fastest fingers 'When I show you 6 I have 6 fingers up and 4 fingers down'. Use dice, Numicon, numeral to represent the numbers that the children then show with their fingers	Grow me/show me numbers to 20 with a partner (One be the ten)

	down'. (Use, dice, Numicon, numeral to represent the number)		
Number representations	Different number representations to 5 including numeral, dice, Numicon, five frame, number blocks, finger patterns, big things, small things, where it is on a number track. Bingo game Roll dice - can they find a matching representation?	Different number representations to 10 including numeral, dice, Numicon, five frame, number blocks, finger patterns, big things, small things, where it is on a number track. Bingo game Roll dice - can they find a matching representation?	10 to 20 (also compare with 1 to 9). What's the same? What's different?
Comparing and ordering numbers	Understand concepts of more and fewer (piles of objects which are clearly more and fewer) Compare numbers to 5 eg using towers of cubes – to show 'staircase ' pattern of the numbers ie each number is one more than the previous number five frame concept images '5 is more than 3, 3 is fewer than 5' One more and one less than Order numbers to 5	Comparing numbers to 10 eg using towers of cubes/ five frame concept images/Numicon - '8 is more than 3, 3 is fewer than 8' One more and one less than Order numbers to 10 – eg using digits, towers of cubes, 10 frame concept images	Comparing numbers to 15 then 20 eg using towers of cubes/ ten frame concept images - '15 is more than 13, 13 is fewer than 15' One more and one less than Order numbers to 20
Addition and subtraction	Developing the language of addition and subtraction eg add, take away/subtract, is equal to One more and one less than to 5 Partitioning ie numbers hiding in other numbers Explore concept of equal and not equal (1 add 4 equals 5) Making finger patterns on 2 hands for numbers to 5 Play missing part game eg show children 3 counters then they close eyes, cover some	Developing the language of addition and subtraction One more and one less than to 10 Partitioning ie numbers hiding in other numbers Play missing part game eg show children 5 counters then they close eyes, cover some counters – how many are covered? How do you know? Explore concept of equal to (eg 1 add 4 is equal to 5) Making finger patterns on two hands for numbers to 10 Numicon - explore how a number can be made with two other numbers (e.g. in playdough)	Developing the language of addition and subtraction Use 'first, then, now' stories for addition and subtraction Adding and subtracting single digit numbers using counters on tens frames Double facts

	counters – how many are covered? How do you know? Investigate number bonds to 5 Problem solving				
Number blocks	Series 1 15 episodes	Series 2 episodes 1-7 Revisit series 1 episode 11 and others as appropriate	Series 2 episodes 8-15 Revisit series 1 episode 12 the whole of me and any others as appropriate.	Watch series 3 as appropriate including episode 5 (o)	Solve verbal worded problems involving addition and subtraction
Multiplication and division				Introduce concept of double ie two equal groups Sort dominoes into ‘shows a double’/ ‘does not show a double’ Double numbers to five eg using fingers Use 10 frame 2’s pattern to show doubles	Introduce concept of half, whole divided into two equal parts. Halve even numbers to ten Solve problems involving doubling, halving and sharing
Shape, Space and Measures Develop children’s ability to use time and temperature vocabulary across the year. Describe the speed that children are moving at where appropriate.	Extend children’s vocabulary of size. Teach children the concepts of tall and short (if necessary) Teach children to compare two heights “... is taller than ...”/ “... is shorter than ...” Build on children’s knowledge of 2D and 3D shape and to describe some of	Teach children the concepts of long/ short and near/ far (if necessary) Teach children to compare two lengths “... is longer than ...”/ “... is shorter than ...” and two distances “... is further away than ...”/ “... is nearer than ...”	Teach children the concepts of heavy and light (if necessary) Teach children to compare two weights “... is heavier than ...”/ “... is lighter than ...”	Teach children the concepts of full and empty (if necessary) Teach children to compare the capacities of two containers “... holds more than ...”/ “... holds less than ...”	Teach children to order 3 items by height, length and weight Develop the children’s vocabulary to include “tallest”/ “shortest”, “longest”/ “shortest” and “heaviest”/ “lightest”.

<p>Use money in role play. Save 10p as class reward.</p> <p>Develop children's positional language in play and adult-led activities.</p> <p>Have jigsaws in continuous provision.</p>	<p>their properties (e.g. sides and corners/ faces and edges) Make 2D shape pictures</p> <p>Build on children's knowledge of pattern eg recognise patterns, create patterns by printing, using objects, etc</p>	<p>Use the language of 3D shape in block play, junk modelling, etc. Role play – Santa's workshop (wrap parcels and talk about the 3D shapes) Make 'footprints' of 3D shapes and talk about the 2D faces (wet sand, printing)</p>				
<p>Songs and Rhymes</p>	<p>1,2,3,4,5 Once I caught a fish alive One finger one thumb keep moving 5 Little Ducks</p>	<p>5 Little Speckled frogs</p>	<p>One Elephant came out to play (add 1 song) 1,2 Buckle my shoe</p>	<p>Hot Cross Buns 5 Little Men on a Flying Saucer</p>	<p>10 in the Bed 10 Green Bottles Doubles song Doubles Doubles (I Can Add Doubles!) (song for kids about adding doubles 1-5)- YouTube</p> <p>Doubles Song For Kids Tiny Tunes - YouTube for doubles to 10</p>	
<p>Books</p>			<p>Mouse Count</p>		<p>The Doorbell Rang One is a snail, 10 is a Crab</p>	<p>Handa's Hen</p>

Reception

Year 1 Readiness Checkpoints

CARDINALITY	<ul style="list-style-type: none">➤ Consistently recite the correct sequence of numbers to 20➤ Collect nine from a large pile, e.g. nine pencils from a pot➤ Subitise (instantly recognise) a group that contains up to four, then five, in a range of ways, e.g. fingers, dice, random arrangement?➤ Recognise amounts to 10 on a 10 frame
COMPARISON	<ul style="list-style-type: none">➤ State which group of objects has more➤ Compare two numbers and say which is the larger➤ Say how many there will be if you add or take away one
COMPOSITION	<ul style="list-style-type: none">➤ Subitise small groups within a larger number➤ Reason what is the hidden number for numbers to 10➤ In context, state two groups that make a larger amount? For example, how might the (six) bean bags land? You could have three with stripes up and three with spots up. (simple addition problems)
PATTERN	<ul style="list-style-type: none">➤ Continue, copy and create an AB pattern➤ Identify the pattern rule (unit of repeat) in an AB pattern➤ Spot an error and 'correct' a pattern
SHAPE AND SPACE	<ul style="list-style-type: none">➤ Select and rotate shapes to fit into a given space➤ Use positional vocabulary, to describe where things are➤ See shapes in different orientations and recognise that they are still that shape➤ Recognise a range of triangles, circles and rectangles, and say how they know what they are
MEASURES	<ul style="list-style-type: none">➤ Find something that is longer, shorter, heavier, lighter (etc.) than a reference item➤ Describe the location of something using positional language➤ Order a short sequence of events

Appendix 1 – Reception Stem Sentences

Children to be encouraged to answer mathematical questions in full sentences, to consolidate their understanding and demonstrate their number knowledge. Stem sentences will be used to help children focus on the use of key mathematical words.

<p>Part, whole <i>This is the whole because it is all of it.</i> <i>This not the whole because I do not have all of it.</i> <i>_ is the whole, _ is a part _ is a part. _ is the whole.</i></p>	<p>Subitising <i>I can see _</i> <i>On five or 10 frames ‘I can see _ objects and _ spaces/missing/gaps’</i></p>
<p>More and less <i>One more than _ is _</i> <i>_ is one more than _</i> <i>One less than _ is _</i> <i>_ is one less than _</i></p>	<p>Cardinality <i>1, 2, 3, There are 3 – counting using careful counting strategies</i> <i>For numbers to 10, I can see a full 5 and _ more</i> <i>For teen numbers, on 10 frames, I can see a full ten and _ of the next 10</i> <i>Ten and five is fifteen, fifteen is ten and five</i> <i>I know there are _ because I can see a _ and a _ and I know that there is a and _ in _</i></p>
<p>Equal <i>_ and _ are the same, they are equal</i> <i>_ and _ are not the same, they are not equal</i> <i>_ add 1 is equal to _</i> <i>_ take away _ is equal to _</i> <i>_ subtract _ is equal to _</i></p>	<p>Doubling and halving <i>This is a double because</i> <i>Double _ is _</i> <i>This shows a half because</i> <i>Half _ is _</i></p>
<p>Comparison <i>_ is fewer than _</i> <i>_ is more than _</i></p>	<p>Cardinality <i>1, 2, 3, There are 3 – counting using careful counting strategies</i> <i>For numbers to 10, I can see a full 5 and _ more</i> <i>For teen numbers, on 10 frames, I can see a full ten and _ of the next 10</i> <i>Ten and five is fifteen, fifteen is ten and five</i> <i>I know there are _ because I can see a _ and a _ and I know that there is a and _ in _</i></p>