Early Years Mathematics Planning By end of Autumn Term

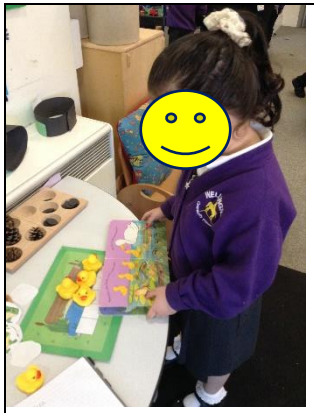
ELG

Number ELG Children at the expected level of development will: Early Adopter Handbook 13 - 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. Numerical Patterns ELG Children at the expected level of development 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.

Educational Programme

Developing a strong grounding in number is essential so that all children develop the necessary building blocks to excel mathematically. Children should be able to count confidently, develop a deep understanding of the numbers to 10, the relationships between them and the patterns within those numbers. By providing frequent and varied opportunities to build and apply this understanding - such as using manipulatives, including small pebbles and tens frames for organising counting - children will develop a secure base of knowledge and vocabulary from which mastery of mathematics is built. In addition, it is important that the curriculum includes rich opportunities for children to develop their spatial reasoning skills across all areas of mathematics including shape, space and measures. It is important that children develop positive attitudes and interests in mathematics, look for patterns and relationships, spot connections, 'have a go', talk to adults and peers about what they notice and not be afraid to make mistakes.

Number	**Milestone 1**
Key vocabulary Count Numbers How many Subitise Add/ Altogether/plus Subtract/Take away Total/answer/equals Sort/Match	• Children recognise and begin to write numerals to 5 • Children begin to subitise quantities within 5, in regular patterns such as dice dots. • Children count out up to at least 5 objects from a larger group. • Understand the cardinal principle – last number reached when counting tells you how many there are. • Show up to 5 fingers without having to count them. • Children make numbers to 5 in playful situations that use addition and subtraction, including identifying the missing number (how many more do I need to make 5?). • Children begin to show some automatic recall for number bonds to 5.

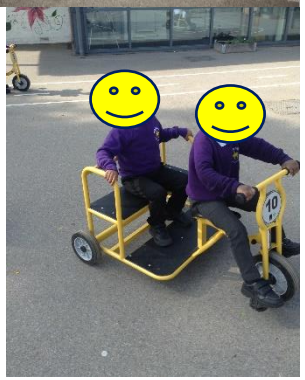


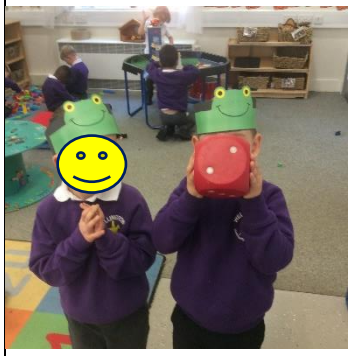
Examples of activities

Sing nursery rhymes such as 5 little ducks, using counting opportunities whole class and in the provision.

Use stories as starting points for activities (how many animals are on the Witches Broom? when reading Room on the Broom). Take whole class Flip charts into the provision with enhancements to match books currently used in English.

Make Number Blocks characters using cubes, match numerals to characters.





Count fruit/milk on the snack table, take opportunities to discuss quantity, how many will be left when we have had some?
Counting opportunities in every area!

Subitising explicitly taught and available in continuous provision such as dice and dominoes.

Opportunities on bikes - How many can fit on a bike? How many spaces are there? How many more can we fit on? How many bikes/helmets do we have? What number is written on each bike?

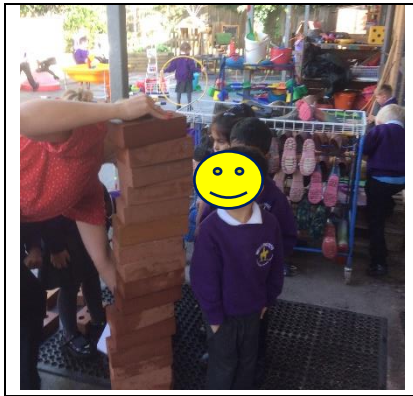
Numerical Patterns **Key vocabulary** Number names Count Pattern **Pattern Rule** More/less Equal Sort Forward/backward Sort/Match	**Milestone 1** • Children count forward and back within 5 using actions or sounds. • Begin to rote count past 20 with a group • Children sort and compare objects, quantities and sizes using concrete resources independently when given the criteria to sort into. • Children can identify which is more/less/the same as when asked. • Children continue, copy and begin to make their own repeated patterns (ABA), ensuring it continues for at least 3 repeats. • Children begin to respond to the question – "What is the pattern rule?"
Examples of activities	

Count red/green lunches as a class/group.
Count children in the line when coming in from play/lunch – all join in or take turns to shout their number.
Key group work counting around the circle, count while clapping/jumping/other actions.
Play games that involve sorting, counting, organising, taking turns around the table.
Loose parts available that encourage natural sorting and organising.
Tidying up routines to include sorting and counting.


Patterns to be explicitly taught repeatedly, availability in all areas on provision using bought and natural resources. Patterns with children (boy/girl) with conkers and pinecones, colours, shapes.
Craft activities – stamping, painting

Shape and Measures	**Milestone 1**
Key vocabulary Circle, triangle, square, rectangle Shape Curved, straight Corner/edge/side Turn 2D Bigger/smaller Taller/shorter Heavier/lighter Full/empty Sort/Match	• Name and talk about the features of basic 2D shapes (circle, triangle, square, rectangle). • Use 2D shapes to make pictures, understanding that rotating them does not change the shape. • Children use blocks of a range of 3D shapes to construct models, talking about why they are fit for their chosen purpose (cones on top of a tower, not the bottom for example). • Understand and begin to use comparative vocabulary for size, length, weight and capacity. • Children demonstrate understanding of positional and directional language such as in, on, under, behind, between, forwards, backwards, up, down, across, responding to instructions using this type of vocabulary.

Examples of activities



Continuous provision – water tray, construction area (large outside and small inside), sand pit. All provide opportunities for comparative exploration. Adults will enhance with their presence and questioning.
Shapes will be explicitly taught – starting with circles and triangles as numbers to 3 are taught first.
Shapes will be part of craft activities as well as put out as enhancements to explore with resources such as wooden/plastic shapes for patterning or shape carpet tiles.

Specific Maths Resources	**Continuous Provision**	**Possible Provision Enhancements**
Tens Frames Wide range of Counters – various, natural and man-made. Number cards and number lines – to 10 and 20. Range of shapes – plastic or wooden, carpet tiles, in craft (paper/card, pre-cut or for children to cut). Dice in a range of sizes (inside and out). Dominoes of different sizes (inside and out).	Sand and Water Areas with a range of containers and scoops. Construction Areas, inside and out with a range of blocks/bricks. Variety of beads for threading/patterns	Snack Table – add number cards, tens frames, adults to count fruit/milk. Loose parts for sorting, matching, counting.

Misconceptions (Quoting NCETM)

Number

- missing out an object or counting an object twice
- when asked how many cars are in a group of four, simply recounting '1, 2, 3, 4,' without concluding that 'there are four cars in the group'
- when asked to 'get five oranges' from a trayful, a child just grabs some, or carries on counting past five
- when objects in a group are rearranged, the child (unnecessarily) recounts them to find how many there are
- difficulties in counting back
- confusion over the 'teen' numbers – they are hard to learn
- missing a number like 15 (13 or 15 are commonly missed out) or confusing 'thirteen' and 'thirty'.
- children not comparing the numerosity of the group and considering more in terms of size (bigger things are more rather than counting quantity)

- children giving a response that does not match the context when estimating a number; e.g. when adding, giving as an answer a number that is smaller than the numbers given. Example: 'There are 7 cars in a garage and then 2 more go in.' The child guesses there are 4 cars in total inside.
- children suggesting that a larger number than the total are hidden.

Patterns

- not recognising a pattern such as ABBA (e.g. stating that patterns cannot have two of the same colour together)
- when copying or extending a pattern, changing it before making three repeats
- spotting that there is an error but not being able to describe it
- identifying an error but not being able to correct it
- correcting an error by making a 'local correction', which just moves the problem along (e.g. by adding an extra item when colours have been swapped)
- describing the whole pattern instead of identifying the part which repeats, or the unit of repeat.
- Shape
- children thinking that only regular triangles are triangles, only brick-like rectangles are rectangles (i.e. shapes are defined by their image, not by their properties)
- children thinking that squares are only squares when the bottom is horizontal (i.e. shapes are defined by their orientation).

Measures

- keeping track of events, e.g. 'Have I had my lunch yet?'
- positional language associated with time; muddling the relative terms 'yesterday' and' tomorrow'
- using 'long' to describe the shape of something (e.g. a block that is much longer than it is wide) rather than to compare lengths
- not taking into account both ends as the starting and stopping point
- not being able to say 'than' in the phrase, 'this is longer than that'
- not understanding that units must cover a complete length, with no gaps or overlaps, demonstrated by thinking that measuring is about counting units placed along something, or putting a ruler alongside and saying a number
- not understanding that units must be equal.