Early Years Mathematics Planning By end of Summer Term

ELG

Number ELG Children at the expected level of development 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.

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

Key vocabulary

Count
Numbers
How many
Subitise
Add/ Altogether/plus
Subtract/Take away
Total/answer/equals
Sort/Match

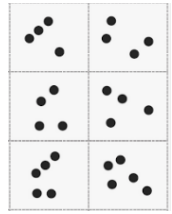
Milestone 3

Children should continue to be successful with all previous milestones, as well as –

- Children recognise and write numerals to 10.
- Children will subitise quantities to 5, recognising them in a range of irregular patterns.
- Children count out more than 10 objects from a larger group.
- Show up to 10 fingers without having to count them out.
- Children make numbers to 10 in playful situations that use addition and subtraction, including identifying the missing number (how many more do I need to make 5?).
- Children demonstrate automatic recall for addition and subtraction number bonds to 5.
- Children begin to demonstrate automatic recall for addition and subtraction number bonds to 10.
- Children can recall doubles of numbers to 5+5 and know how to work out doubles to 10+10 using concrete resources.

Examples of activities

Children make their own number stories using songs or books as inspiration. Talk about their story and use mathematical vocabulary. They write numbers next to their drawings and may begin to record more formally using + - =



Subitise irregular patterns by seeing smaller numbers and being able to recognise the number bonds – "there are 3 there and 1 more which makes 4."

Children are actively involved in changing the role play area – labelling and writing numbers on things (for example a shop/garden centre).
They are able to tidy by counting and matching to the label.

Numerical Patterns

Key vocabulary
Number names
Count
Pattern
Pattern Rule
More/less
Equal
Sort
Forward/backward
Sort/Match
Double/half
Fair/unfair

Milestone 3

Children should continue to be successful with all previous milestones, as well as –

- Rote count past 20 with a group with confidence, including crossing tens barriers (29,30).
- Children sort and compare objects and sizes using concrete resources, experimenting with different ways to do so and talking about it.
- Children describe quantities using words such as "more" or "less" or "the same as".
- Children use concrete resources to demonstrate their understanding of patterns when finding doubles and halves.
- Children identify when sharing is unfair – understanding what half means.
- Children continue and make their own repeated patterns with at least 3 variables (ABC, ABBC), continuing the pattern for at least 3 repeats.
- Children describe their own patterns, explaining their "pattern rule" (blue, red, red, green, then blue again)
- Children spot errors in patterns and suggest how to fix it.
- Children explore patterns around a circle and around a border with a fixed number of spaces.

Examples of activities

Tens frames (x3, with numbers to 30) on the door for children to put their names on as they come in. What number is their name on? Can they say how many children there are in the class by looking for the last name on the tens frame?

Shape and Measures

Key vocabulary

Circle, triangle, square, rectangle
Shape
Curved, straight
Corner/edge/side
Turn
2D
Bigger/smaller
Taller/shorter
Heavier/lighter
Full/empty
Sort/Match

Milestone 3.

Children should continue to be successful with all previous milestones, as well as –

- Purposefully choose 2D shapes to make 3D models, for example, triangles and rectangles to make a tent.
- Compare and order a range of objects by their size, length, weight or capacity.
- Children use positional and directional vocabulary themselves to describe positions and movements (for example in, on, under, forwards, backwards) to give directions to others.

Examples of activities

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.