

Grove Vale EYFS - Mathematics

Early Learning Goal

Number

Children at the expected level of development will:

- Have a deep understanding of numbers 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

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.

Development Matters – Reception	
Children in reception will be learning to:	Examples of how to support this:
Count objects, actions and sounds	<p>Develop the key skills of counting objects including saying the numbers in order and matching one number name to each item. Say how many there are after counting – for example, “...6, 7, 8. There are 8 balls” – to help children appreciate that the last number of the count indicates the total number of the group. This is the cardinal counting principle. Say how many there might be before you count to give a purpose to counting: “I think there are about 8. Shall we count to see?” Count out a smaller number from a larger group: “Give me seven...” Knowing when to stop shows that children understand the cardinal principle. Build counting into everyday routines such as register time, tidying up, lining up or counting out pieces of fruit at snack time. Sing counting songs and number rhymes, and read stories that involve counting. Play games which involve counting. Identify children who have had less prior experience of counting, and provide additional opportunities for counting practice.</p>
Children in reception will be learning to:	Examples of how to support this:
Subitise.	<p>Show small quantities in familiar patterns (for example, dice) and random arrangements. Play games which involve quickly revealing and hiding numbers of objects. Put objects into five frames and then ten frames to begin to familiarise children with the tens structure of the number system. Prompt children to subitise first when enumerating groups of up to 4 or 5 objects: “I don’t think we need to count those. They are in a square shape so there must be 4.” Count to check. Encourage children to show a number of fingers ‘all at once’, without counting.</p>
Link the number symbol (numeral) with its cardinal number value.	<p>Display numerals in order alongside dot quantities or tens frame arrangements. Play card games such as snap or matching pairs with cards where some have numerals and some have dot arrangements. Discuss the different ways children might record quantities (for example, scores in games), such as tallies, dots and using numeral cards.</p>

Count beyond ten	Count verbally beyond 20, pausing at each multiple of 10 to draw out the structure, for instance when playing hide and seek, or to time children getting ready. Provide images such as number tracks, calendars and hundred squares indoors and out, including painted on the ground, so children become familiar with two-digit numbers and can start to spot patterns within them.
Compare numbers.	Provide collections to compare, starting with a very different number of things. Include more small things and fewer large things, spread them out and bunch them up, to draw attention to the number not the size of things or the space they take up. Include groups where the number of items is the same. Use vocabulary: 'more than', 'less than', 'fewer', 'the same as', 'equal to'. Encourage children to use these words as well. Distribute items evenly, for example: "Put 3 in each bag," or give the same number of pieces of fruit to each child. Make deliberate mistakes to provoke discussion. Tell a story about a character distributing snacks unfairly and invite children to make sure everyone has the same.
Understand the 'one more than/one less than' relationship between consecutive numbers.	Make predictions about what the outcome will be in stories, rhymes and songs if one is added, or if one is taken away. Provide 'staircase' patterns which show that the next counting number includes the previous number plus one.
Explore the composition of numbers to 10.	Focus on composition of 2, 3, 4 and 5 before moving onto larger numbers. Provide a range of visual models of numbers: for example, six as double three on dice, or the fingers on one hand and one more, or as four and two with ten frame images. Model conceptual subitising: "Well, there are three here and three here, so there must be six." Emphasise the parts within the whole: "There were 8 eggs in the incubator. Two have hatched and 6 haven't yet hatched." Plan games which involve partitioning and recombining sets. For example, throw 5 beanbags, aiming for a hoop. How many go in and how many don't?
Children in reception will be learning to:	Examples of how to support this:
Automatically recall number bonds for numbers 0–10.	Have a sustained focus on each number to 10. Make visual and practical displays in the classroom showing the different ways of making numbers to 10 so that children can refer to these. Play hiding

	games with a number of objects in a box, under a cloth, in a tent, in a cave, etc.: "Seven went in the tent and 2 came out. I wonder how many are still in there?" Intentionally give children the wrong number of things. For example: ask each child to plant 4 seeds then give them 1, 2 or 3. "I've only got 1 seed, I need 3 more." Spot and use opportunities for children to apply number bonds: "There are 6 of us but only 2 clipboards. How many more do we need?" Place objects into a five frame and talk about how many spaces are filled and unfilled.
Select, rotate and manipulate shapes in order to develop spatial reasoning skills.	Provide high-quality pattern and building sets, including pattern blocks, tangrams, building blocks and magnetic construction tiles, as well as found materials. Challenge children to copy increasingly complex 2D pictures and patterns with these 3D resources, guided by knowledge of learning trajectories: "I bet you can't add an arch to that," or "Maybe tomorrow someone will build a staircase." Teach children to solve a range of jigsaws of increasing challenge.
Compose and decompose shapes so that children recognise a shape can have other shapes within it, just as numbers can.	Investigate how shapes can be combined to make new shapes: for example, two triangles can be put together to make a square. Encourage children to predict what shapes they will make when paper is folded. Wonder aloud how many different ways there are to make a hexagon with pattern blocks. Find 2D shapes within 3D shapes, including through printing or shadow play
Continue, copy and create repeating patterns.	Make patterns with varying rules (including AB, ABB and ABBC) and objects and invite children to continue the pattern. Make a deliberate mistake and discuss how to fix it.
Compare length, weight and capacity.	Model comparative language using 'than' and encourage children to use this vocabulary. For example: "This is heavier than that." Ask children to make and test predictions. "What if we pour the jugful into the teapot? Which holds more?"
Skills and Knowledge	
Autumn	
Number	Numerical Patterns

Subitise

- Recognise different ways of showing an amount (to 5).
- Match different arrangements of same amount (dot cards).

Composition of numbers

- Count real objects that are the same type but different colour or size.
How many of each? What is the total? (Part-whole).
- Inverse operations — eg 5 currant buns, (whole is 5 but some are in the shop and some are taken away) Skittles (total, how many knocked over/left).
- Partitioning into different pairs of numbers.
- Count out objects from a larger group (up to 5) How many objects are left?
- How many different ways can we make each number?

Counting

- Count in sequence forward and backwards (to 10).
- Count identical, real objects putting them into a line (use five frame) - initially concentrate on the numbers 1-3, then move onto 4 and 5.
- Count actions and sounds.

Numerical patterns

- Recognise that when we count forwards each number is 1 more and backwards they are 1 less.
- Place amounts to 5 in order.
- Match numerals and amounts to 5.

Compare and order numbers

- Match and sort objects.
- Compare identical and non-identical objects to 5 using the vocab: more than, fewer than, equal to, the same as (use five frames to compare).
- Order amount and numbers to 5.

One more/one less

	<ul style="list-style-type: none"> • Practical activities in real life situations and number songs. • Find one more/less to 5 by counting.
Spring	
Number	Numerical Patterns
<p>Subitise</p> <ul style="list-style-type: none"> • Recognise different ways of showing an amount (to 10) – dot cards, games. <p>Composition of numbers</p> <ul style="list-style-type: none"> • Continue to explore the composition of numbers (to 5, then 10) and how they can be partitioned into 2 or more than 2 parts. How many ways can we make each number? • Take objects away. How many objects are left? <p>Number bonds to 5</p> <ul style="list-style-type: none"> • Use real life objects and practical situations. Embed use of five frame. • Use part-whole model. • Find missing numbers. • Aim for quick recall. <p>Investigate number bonds to 10</p>	<p>Counting</p> <ul style="list-style-type: none"> • Count in sequence forward and backwards (to 10) from different starting points. • Count identical, real objects (using ten frame). • Introduce zero and the symbol 0. • Count out objects from a larger group (up to 10). • Match numerals and amounts to 10. <p>Numerical patterns</p> <ul style="list-style-type: none"> • Count to 20 and beyond, recognising patterns of counting system (focus on 2-digit numbers 10-20). • Place amounts and numerals to 10 in order. • Doubling using real objects. <p>Compare and order numbers</p> <ul style="list-style-type: none"> • Compare numbers to 10; embed vocab more, less, fewer, equal, same (Use 10 frames to compare).

<ul style="list-style-type: none"> Combine 2 groups to find a total – practically. (Use the vocab of addition: total, altogether, plus add) Use vocab of subtraction: how many were left? Explore number bonds to 10 - look for different ways to make the same total. Use part – whole model. Use ten frame to explore different ways to make a number to 10. 	<ul style="list-style-type: none"> Order numbers to 10. <p>One more/one less</p> <ul style="list-style-type: none"> Practical activities in real life situations and number songs. Find one more/less to 10 by counting.
Summer	
Number	Numerical Patterns
<p>Subitise</p> <ul style="list-style-type: none"> Show fingers 'all at once' without counting. Consolidate recognising numbers on number frame by subitising – eg 8 is 5 and 3. Estimate and count. <p>Composition of numbers</p> <ul style="list-style-type: none"> Partition and recombine. Quick recall of number bonds to 5. Addition and subtraction to 10 (embed understanding). 	<p>Counting</p> <ul style="list-style-type: none"> Consolidate counting on and back within 10. Consolidate 1:1 counting of objects and pictures. Count on and back from different starting points. <p>Numerical patterns</p> <ul style="list-style-type: none"> Doubling. Explore odds and even numbers. Count to 100 in sequence. Place numerals to 20 in order. Look at patterns on number square.

	<ul style="list-style-type: none"> Count in 2s and 10s and discuss the pattern. <p>Compare and order numbers</p> <ul style="list-style-type: none"> Sharing between 2 or more people. Do they all have the same amount? Grouping – making groups of 2, 3. <p>One more/one less</p> <ul style="list-style-type: none"> Embed understanding – quick recall up to 10 using knowledge of consecutive numbers. Say the number one more/less than a given number. Adding 2 more.
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Shape, Space and Measures Skills/Knowledge		
Autumn	Spring	Summer
<p>Shape- spatial reasoning</p> <ul style="list-style-type: none"> Make shape pictures, use shapes to construct models, complete jigsaws. 2D shapes - 1, 3, 4 sides /Vocab: curved, straight, side, corner. Use shapes to explore how shapes can be combined or partitioned to make new shapes (eg 2 triangles to make a square). 	<p>Shape- spatial reasoning</p> <ul style="list-style-type: none"> Recognise 2D shapes in a picture and in different orientations. Building models for a purpose using 3D shapes. Compose and decompose shapes. 	<p>Shape- spatial reasoning</p> <ul style="list-style-type: none"> Jigsaws (above 20 pieces) and shape puzzles. Match shapes from different orientations. Match arrangements of linking cubes. Tangrams.

<ul style="list-style-type: none"> Continue, copy and create repeating patterns - AB patterns. Spot mistakes. <p>Spatial Awareness</p> <ul style="list-style-type: none"> Positional language (link to UW, PD obstacle course): in, on, under, up, down, across, forwards, backwards. Jigsaws, train tracks, beebots. <p>Compare length, weight and capacity</p> <p>Direct comparison</p> <ul style="list-style-type: none"> Use comparative language 'than' to compare the height of 2 children. Use vocab taller, shorter. Introduce balance scales for cooking. Use vocab heavier, lighter, balance. Compare containers by pouring from one container to another. Use vocab full, empty, half full/empty. Time — visual timetable. Use vocab now, next, later (link with UW). Days of the week 	<ul style="list-style-type: none"> Investigate 3D shapes — print, what 2D shapes are made (link to EAD Kadinsky) vocab curved, flat, roll, stack. Continue, copy and create repeating patterns - ABC, AAB, ABB patterns. Spot mistakes. <p>Spatial Awareness</p> <ul style="list-style-type: none"> Positional language (link to UW, PD obstacle course) / Vocab: in front of, behind, left, right. <p>Compare length, weight and capacity</p> <p>Indirect</p> <ul style="list-style-type: none"> Compare capacity - Investigate different sized and shaped containers. Use vocab tall, thin, narrow, wide and shallow (how many pots/spoonfuls to fill each container?) Measure length using cubes, worms etc. Measure ingredients for cooking. Time: order and sequence events. Use vocab now, before, later, soon, after, then, next, yesterday, today, tomorrow (link with UW). Months of the Year. 	<ul style="list-style-type: none"> Explore patterns in more detail — copy clapping and action patterns - ABBC , (ABBCC when confident). <p>Spatial Awareness</p> <ul style="list-style-type: none"> Positional language (link to UW, PD obstacle course, design plans). <p>Compare length, weight and capacity</p> <ul style="list-style-type: none"> Consolidate understanding of length, weight and capacity through direct and indirect comparisons. Use in real life situations to solve problems.
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