Mathematics in EYFS

Alexandra Park Primary School
"Care, Aspire, Achieve"

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.

This document demonstrates which statements from Development Matters are prerequisite skills for mathematics within the national curriculum.
The table below outlines the most relevant statements taken from the Early Learning Goals in the EYFS statutory framework and the Development Matters age ranges for Three and Four-Year-Olds and Reception to match the programme of study for mathematics.

The most relevant statements for mathematics are taken from the following areas of learning:
- Communication and Language
- Mathematics

This document also shows our curriculum overview for Mathematics. Please view EYFS Curriculum Overview to see our complete curriculum.

Staff use their knowledge and expertise to plan for a high-quality learning environment both indoors and outdoors which provides children with lots of opportunities to explore different aspects of number and shape, space and measures and learn new concepts.

Staff model appropriate mathematical language as they support the children in their play. Throughout the year a wide range of number songs and rhymes are shared with the children along with stories that support the children's mathematical development. To support with sequencing our mathematics curriculum we follow Master the Curriculum in Nursery and White Rose Maths along with Mastering Number in Reception.

Mathematical Vocabulary			
Three and Four-Year-Olds	Communication and Language		• Use a wider range of vocabulary. • Understand 'why' questions, like: "why do you think the caterpillar is so fat?"
Reception	Communication and Language		• Learn new vocabulary. • Use new vocabulary throughout the day.
ELG	Communication and Language	Speaking	• Participate in small group, class and one-to-one discussions, offering their own ideas, using recently introduced vocabulary.

Number and Place Value			
Counting			
Three and Four-Year-Olds	Mathematics		• Recite numbers past 5. • Say one number name for each item in order: 1, 2, 3, 4, 5. • Know that the last number reached when counting a small set of objects tells you how many there are in total ('cardinal principle').
Reception	Mathematics		• Count objects, actions and sounds. • Count beyond ten.
ELG	Mathematics	Numerical Patterns	• Verbally count beyond 20, recognising the pattern of the counting system.
Identifying, Representing and Estimating Numbers			
Three and Four-Year-Olds	Mathematics		• Develop fast recognition of up to 3 objects, without having to count them individually ('subitising'). • Show 'finger numbers' up to 5. • Link numerals and amounts: for example, showing the right number of objects to match the numeral, up to 5. • Experiment with their own symbols and marks as well as numerals.
Reception	Mathematics		• Subitise. • Link the number symbol (numeral) with its cardinal number value.
ELG	Mathematics	Number	• Subitise (recognising quantities without counting) up to 5.

Reading and Writing Numbers			
Three and Four-Year-Olds	Mathematics		• Link numerals and amounts: for example, showing the right number of objects to match the numeral, up to 5. • Experiment with their own symbols and marks as well as numerals.
Reception	Mathematics		• Link the number symbol (numeral) with its cardinal number value.
Compare and Order Numbers			
Three and Four-Year-Olds	Mathematics		• Compare quantities using language: 'more than', 'fewer than'.
Reception	Mathematics		• Compare numbers.
ELG	Mathematics	Numerical Patterns	• Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity.
Understanding Place Value			
Reception	Mathematics		• Understand the 'one more than/one less than' relationship between consecutive numbers. • Explore the composition of numbers to 10.
ELG	Mathematics	Number	• Have a deep understanding of numbers to 10, including the composition of each number.
Solve Problems			
Three and Four-Year-Olds	Mathematics		• Solve real world mathematical problems with numbers up to 5.

Addition and Subtraction			
Mental Calculations			
Reception	Mathematics		• Automatically recall number bonds for numbers 0-5 and some to 10.
ELG	Mathematics	Number	• 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.
Solve Problems			
ELG	Mathematics	Numerical Patterns	• Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed evenly.

Measurement		
Describe, Measure, Compare and Solve (All Strands)		
Three and Four-Year-Olds	Mathematics	• Make comparisons between objects relating to size, length, weight and capacity.
Reception	Mathematics	• Compare length, weight and capacity.

Telling the Time		
Three and Four-Year-Olds	Mathematics	• Begin to describe a sequence of events, real or fictional, using words, such as 'first', 'then…'

Properties of Shapes		
Recognise 2D and 3D Shapes and their Properties		
Three and Four-Year-Olds	Mathematics	• Talk about and explore 2D and 3D shapes (for example, circles, rectangles, triangles and cuboids) using informal and mathematical language: 'sides', 'corners', 'straight', 'flat', 'round'. • Select shapes appropriately: flat surfaces for a building, a triangular pattern for a roof, etc. • Combine shapes to make new ones – an arch, a bigger triangle, etc.
Reception	Mathematics	• Select, rotate and manipulate shapes in order to develop spatial reasoning skills.
Compare and Classify Shapes		
Reception	Mathematics	• Compose and decompose shapes so that children can recognise a shape can have other shapes within it, just as numbers can.

Position and Direction		
Position, Direction and Movement		
Three and Four-Year-Olds	Mathematics	• Understand position through words alone – for example, "The bag is under the table," – with no pointing. • Describe a familiar route. • Discuss routes and locations, using words like 'in front of' and 'behind'.
Reception	Understanding the World	• Draw information from a simple map.
Patterns		
Three and Four-Year-Olds	Mathematics	• Talk about and identify the patterns around them. For example, stripes on clothes, designs on rugs and wallpaper. Use informal language like 'pointy', 'spotty', 'blobs', etc. • Extend and create ABAB patterns – stick, leaf, stick, leaf. • Notice and correct an error in a repeating pattern.
Reception	Mathematics	• Continue, copy and create repeating patterns.

Statistics		
Record, Present and Interpret Data		
Three and Four-Year-Olds	Mathematics	• Experiment with their own symbols and marks, as well as numerals.

Nursery MATHEMATICS: □ Numerical Pattern □ Number

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.

Autumn

White Rose Maths:

Autumn 1: Comparison 1 / Shape, space and measure 1 / Pattern 1 / Counting 1
Autumn 2: Counting 2 / Subitising 1 / Pattern 2 / Shape, space and measure 2

Numerical Pattern / Number

Begin to compare quantities … *group, lots, more, same, less*

- Sort, match and label groups… *collect objects to compare amounts / make simple comparisons of amounts*
- Find the group with more / the same / less… *look for collections of large and small amounts / compare and talk about large and small amounts / make large and small collections / make collections the same*

Arrange things in patterns.

Notice, identify and talk about patterns around them

Begin to copy and talk about a pattern – *ABAB*

- Give pattern a name… *spotty, stripy, zig zag ...make line patterns with own sequences / choose blocks to build roads and towers*
- Join in with repeats *…join in with repeated actions in songs / join in with repeats in songs and stories / sing some refrains independently / have a sense of daily routines / say what happens next / make arrangements in art*

Begin to recite numbers to 5 in correct order *…copy the sequence of 1, 2 and 3 / say number names in order*

Explore 1:1 correspondence

Begin to say one number for each item to 3

- Join in with number rhymes / songs with props & actions *...listen to repeats in songs and stories / start to join in songs with repeats / start to join in with repeats from stories / clap along to songs*
- Use some number names in play *…model saying 1, 2 and 3 in play / copy fingers to represent 1, 2 and 3 / begin to count actions / begin to recognise that anything can be counted*

Begin to develop fast recognition of up to 3 objects – subitising *…notice images in books / respond to "I see 1, 2, 3" / Recognise "I see 1, 2, 3" / Copy "I see 1, 2, 3" / point to 1, 2, 3 / recognise 1, 2, 3 in well-known tales*

Begin to experiment with own symbols and marks

Shape, Space & Measure

Begin to select shapes for appropriate tasks

- Show interest in shapes in the environment… *explore and play with shapes / select shapes for a reason / find and collect objects for a purpose / select shapes for a space*

Begin to talk about shapes *…round, pointy, spotty, stripy ...show interest in simple differences between shapes / begin to explore and describe natural shapes and objects / recognise when 2 objects are the same shape / explore and describe shapes and objects*

Make comparisons between objects using appropriate vocabulary

- Size *… big / small / bigger / smaller …sort shapes and objects into simple categories*

Understand positional language within daily routine *… in / on / under ...put shapes and blocks into position / respond to simple language of position / arrange blocks in a chosen position*
Begin to understand the language of time within the daily routine … *next, later, after*

Spring

White Rose Maths:

Spring 1: Subitising 2 / Counting 3 / Shape, space and measure 3 / Pattern 3
Spring 2: Counting 4 / Shape, space and measure 4 / Subitising 3 / Comparison 2

Numerical Pattern / Number

Name and talk about patterns… *ABAB …explain simple pattern arrangements / make simple line patterns with objects / make simple pattern arrangements / show an interest in patterns and shapes*

Recite numbers to 5

Show and join in with number rhymes to 5, using props and fingers *…make actions when saying counting words / move fingers when saying counting words / count out up to 3 objects from rhymes*

Use fingers to represent numbers with increasing accuracy *…copy fingers to show 1, 2, 3 / show 1 finger when seeing 1 item in stories / show 2 or 3 fingers when seeing 2 or 3 in stories / show 1, 2, 3, on fingers when asked*

Use some numbers names in play with some accuracy *…notice number symbols as labels / label amounts as 1 and not 1 / label amounts as 1, 2 or 3*

Sort and match objects accordingly e.g., *size / shape …match simple shapes*

Begin to compare quantities using … *more than / fewer than …notice when two collections are the same / make collections of small objects the same / make collections of large objects the same / recognise two collects are the same using large and small objects / make collections the same using large and small objects / sort and talk about their own collections*

Continue to develop fast recognition of up to 3 objects – subitising *…become familiar with dot patterns / say when there is 1 dot / say when there are 2 dots / recognise 1 and 2 in different arrangements / say when there are 3 dots / recognise 1, 2 and 3 in different arrangements*

Begin to count up to sets of 5 objects (1:1 correspondence) *…choose a group to count / take out 2 from a group / take out 3 from a group/ give others 2 items / give others 3 items / count 3 objects with one-to-one correspondence*

Begin to understand and explore the 'cardinal principle' when counting objects

Begin to represent numbers with marks

Shape, Space & Measure

Select shapes appropriately in a range of contexts *…explore shape resources / explore more complex inset jigsaws*

Begin to combine shapes to make new ones… *a longer rectangle …make roads and bridges with intent / choose blocks to copy simple creations / push some shapes and blocks together / make simple arrangements / talk about arrangements*

Talk about shapes… *size, corners, straight*

Make comparisons between objects using appropriate vocabulary…

- Size… *bigger, smaller, the same,*
- Length… *shorter, longer*

Begin to understand some positional language, with support within the wider environment *…talk about simple positions / move into simple positions / move through positions*

Begin to use some language of time within the daily routine

Begin to describe a familiar route *…follow simple small-world routes / follow simple routes outside / follow toys around a simple route*

Begin to describe a sequence of events *… first, next*

Summer

White Rose Maths:

Summer 1: Pattern 4 / Shape, space and measure 5 / Pattern 5 / Subitising 4
Summer 2: Counting 5 / Pattern 6 / Counting 6 / Comparison 3

Numerical Pattern / Number

Extend and create ABAB patterns
Notice and correct an error in a repeating pattern

Recite numbers past 5

Fast recognition of up to 3 objects - subitising

Say one number for each item in order: 1,2,3,4,5.

Know that the last number reached when counting a small set of objects tells you how many there are in total ('cardinal principle').

Show 'finger numbers' up to 5.

Link numerals and amounts up to 5.

Experiment with own symbols and marks, as well as numerals.

Solve real world mathematical problems with numbers up to 5

Compare quantities using language, 'more than', 'fewer than'

Shape, Space & Measure

Talk about and explore 2D and 3D shapes, using informal and mathematical language… *sides, corner, straight, flat, round*

Understand position through words alone

Describe a familiar route

Discuss routes and locations… *in front of, behind*

Make comparisons between objects relating to size, length, weight and capacity

- Weight… *heavier, lighter,*
- Capacity… *more, lots, less*

Select shapes appropriately: flat surfaces for building, a triangular prism for a roof etc.

Combine shapes to make new ones

Talk about and identifies the patterns around them… *stripes on clothes, designs on rugs or wallpaper*

Begin to describe a sequence of events, real or fictional, using words such as 'first', 'then...'

Reception MATHEMATICS: □ Numerical Pattern □ Number

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.

Autumn

Numerical Pattern / Number

Recite numbers to 10

- Forward & backward finger rhymes *forwards, backwards.*
- Break counting chain (not always starting from 1).
- Talk about position … *before, after.*

Count objects, actions and sounds.

- Up to 5 – in context of the daily routine, sharing, turn taking.
- Match pictures and objects.
- Count objects in an irregular arrangement.
- Identify a set.
- Compare amounts.

Begin to subitise 3 / 4 /5 objects (quick recall without counting).

- Fast recognition of dice patterns

Find 1,2,3,4,5 and represent 1,2, 3,4,5

Link the number symbol (numeral) with its cardinal number value to 5.

Compare quantities up to 5 … *more than, less than, fewer, who has one more / less.*

Understand 'one more/less than' to 5.

- Use sentence with support … *Three is one more than two*

Explore the composition of numbers to 5.

- Recognise total is still the same.
- Using variety of resources … *more, less, makes, equals, altogether.*

- Begin to explore number bonds to 5.
- Use a range of resources.

Shape, Space & Measure

Select, rotate and manipulate shapes in order to develop spatial reasoning skills.

- Create shape picture …consolidate …*2D shape names.*
- Put shapes together to make new shape … *fit, turn.*

Identify and name circle and triangles.

Compare circles and triangles.

Identify shapes in the environment.

Begin to describe position.

Continue, copy and create repeating patterns.

- Talk about pattern … *repeat, next, before, after, in between.*
- Explore simple patterns

Begin to compare length, weight and capacity.

- Order 2-3 items by length / weight *… heavier/est, lighter/est, longer/est, shorter/est.*

Spring

Numerical Pattern / Number

Recite numbers to 20.

- Backward from 10 and begin to recite backwards from 15.
- Break counting chain (not always starting from 1 forwards or 10 backwards).
- Talk about position up to 5 and begin to talk about position up to 10.

Count objects, actions and sounds.

- Up to 10, in context of daily routine, sharing and turn taking.
- Count objects in an irregular arrangement.
- Begin to estimate number of objects up to 10 then check by counting.

Find 0-5 objects. Represent 0-5.

Find 6,7 and 8. Represent 6,7 and 8.

Find 9 and 10. Represent 9 and 10.

Subitise 0-5 objects (quick recall without counting).

Explore zero.

Link the number symbol (numeral) with its cardinal number value to 10.

Compare quantities up to 10.

Explore the composition of numbers to 10.

Understand 'one more/less than' to 10.

- Use sentence … *six is one more than five.*

Begin to explore the composition of numbers to 10.

Begin to explore conceptual subitising to 10.

Recall number bonds to 5.

Begin to know bonds to 10 (2 parts) and bonds to 10 (3 parts)

Find the total number of items (up to 10) in two groups by counting all of them together, using a range of manipulatives … *altogether, more/now.*

- Find the total number of items (up to 10) in a group by take away/subtraction, using a range of manipulatives … *left.*

Make arrangements of 10.

Begin to share, double and half up to 10 objects.

Make pairs – odd and even.

Explore odd and even.

Shape, Space & Measure

Select, rotate and manipulate shapes in order to develop spatial reasoning skills.

Recognise and name 3d shapes.

Find 2d shapes within 3d shapes.

Begin to compose and decompose shapes within practical activities.

Continue, copy and create repeating patterns.

Begin to identify more complex patterns.

Identify patterns in the environment.

Compare length, height, weight, mass and capacity.

- Order 2-3 items by capacity and height.

Explore length, capacity and height.

Summer

Numerical Pattern / Number

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

Build numbers beyond 10.

Continue patterns beyond 10.

Subitise (recognise quantities without counting) up to 5.

Add more and take away.

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.

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 sharing and grouping.

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

Play with and build doubles.

Shape, Space & Measure

Select, rotate and manipulate shapes in order to develop spatial reasoning skills.

Explain shape arrangements.

Compose and decompose shapes within practical activities

Copy 2d shape pictures.

Find 2d shapes within 3d shapes.

Continue, copy and create more complex repeating patterns.

Identify units of repeating patterns.

Create and explore own pattern rules.

Replicate and scenes and constructions.

Visualise from different positions.

Describe positions.

Give instructions to build.

Explore mapping.

Represents maps with models.

Compare length, height, weight and capacity.

Order and sequence familiar events.

- Measure and compare short periods of time.

Explore patterns and relationships.

	Find a balance. Begin to order and sequence familiar events. Talk about time. ▪ Become familiar with a clock face and hands. ▪ Measure short periods of time. ▪	

Mapping Curriculum Objectives How the early learning goals feed into objectives from the Year 1 National Curriculum.	**Year 1 National Curriculum Objective** **Number and Place Value** • Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number. • Count, read and write numbers to 100 in numerals; count in multiples of twos, fives and tens. • Given a number, identify one more and one less. • Identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal to, more than, less than (fewer), most, least. • Read and write numbers from 1 to 20 in numerals and words. **Addition and Subtraction** • Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs. • Represent and use number bonds and related subtraction facts within 20. • Add and subtract one-digit and two-digit numbers to 20, including zero. • Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = [] - 9. **Multiplication and Division** • Solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher. **Measurement** **Compare, describe and solve practical problems for:** • lengths and heights (long/short, longer/shorter, tall/short, double/half) • mass or weight (heavy/light, heavier than, lighter than)

	• capacity/volume (full/empty, more than, less than, quarter) • time (quicker, slower, earlier, later) **Measure and begin to record:** • lengths and heights • mass/weight • capacity and volume • time (hours, minutes, seconds) • Recognise and know the value of different denominations of coins and notes. • Sequence events in chronological order using language, such as before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening. • Recognise and use language relating to dates, including days of the week, weeks, months and years. • Tell the time to the hour and half past the hour and draw the hands on a clock face to show these times. **Position and Direction** • Describe position, directions and movements, including half, quarter and three-quarter turns. **Shape** • Recognise and name common 2D and 3D shapes, including circles, triangles, rectangles (including squares), pyramids, spheres and cuboids (including cubes).