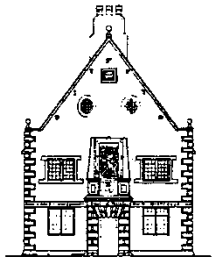
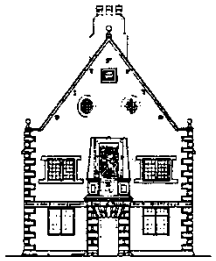


Progression of Knowledge and Skills for Mathematics

Number, Numerical Patterns and Measures, Shape & Spatial Thinking

Early Years Curriculum



Nursery (3-4 years)

Mathematics: Number and Numerical Patterns

End of Nursery:

Number and place value

Uses number names to 10 and sometimes counts accurately.
Represents numbers using marks, fingers or digits.

Calculation

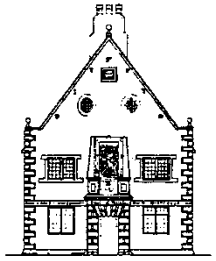
Says when two small groups have the same number of objects.
Identifies numerals in the environment.

<table>
<tr><th></th><th colspan="2">Autumn 1</th><th colspan="2">Autumn 2</th><th colspan="2">Spring 1</th><th colspan="2">Spring 2</th><th colspan="2">Summer 1</th><th colspan="2">Summer 2</th></tr>
<tr><td>Rising 4s (just tuned 3y) (Nursery)</td><td colspan="4"></td><td colspan="8">Knows that things exist, even when out of sight.
Begins to organise and categorise objects (e.g. putting all the teddy bears together or teddies and cars in separate piles).
Says some counting words randomly.
Selects a small number of objects from a group when asked (e.g. ‘please give me two’).</td></tr>
<tr><td>Rising 5s (3y-4y) (Pre-school)</td><td colspan="4">Recites some number names in sequence (not necessarily understand at this stage).
Mark makes and ascribes some concept of number to the marks (attempts at digits from the environment, making dots, lines etc).</td><td colspan="4">Shows understanding of conservation.
Sorts objects using one simple criteria.
Brings one or two objects when an adult requests.
Shows an understanding of simple comparisons like ‘more’.
Recognises of up to 3 object quickly, without having to count them individually (‘subitising’).
Recites numbers past 5.
Says one number for each item in order: 1,2,3,4,5.
Knows that the last number reached when counting a small set of objects tells you how many there are in total (‘cardinal principle’).
Shows ‘finger numbers’ up to 5.
Links numerals and amounts: for example, showing the right number of objects to match the numeral, up to 5.
Experiments with their own symbols and marks as well as numerals.
Solves real world mathematical problems with numbers up to 5.
Compares quantities using language: ‘more than’, ‘fewer than’.
Talks about and identifies the patterns around them. For example: stripes on clothes, designs on rugs and wallpaper. Use informal language like ‘pointy’, ‘spotty’, ‘blobs’ etc.
Extends and create ABAB patterns – stick, leaf, stick, leaf.
Notices and correct an error in a repeating pattern.
Begins to describe a sequence of events, real or fictional, using words such as ‘first’, ‘then…’</td><td colspan="4">Number and place value
Uses number names to 10 and sometimes counts accurately.
Represents numbers using marks, fingers or digits.
Calculation
Says when two small groups have the same number of objects.
Identifies numerals in the environment.</td></tr>
</table>

Mathematics: Measures, Shape and Spatial Thinking

End of Nursery:
Talks about the routine of the day and use language like *'before'* and *'after'*.
Uses comparative language like *'taller', 'shorter', 'the same'*.
Starts to identify shapes in the environment.
Starts to find appropriate shapes for certain tasks.
Asks questions about my observations of differences and similarities.
Starts to make more meaningful pictures, patterns and arrangements with shapes.

<table>
<tr><th></th><th colspan="2">Autumn 1</th><th colspan="2">Autumn 2</th><th colspan="2">Spring 1</th><th colspan="2">Spring 2</th><th colspan="2">Summer 1</th><th colspan="2">Summer 2</th></tr>
<tr><td>Rising 4s (just tuned 3y) (Nursery)</td><td colspan="4"></td><td colspan="8">Attempts, sometimes successfully, to fit shapes into spaces on inset boards or jigsaw puzzles.
Uses blocks to create my own simple structures and arrangements.
Fills and empties containers.
Associates a sequence of actions with daily routines.
Begins to understand that things might happen 'now.'</td></tr>
<tr><td>Rising 5s (3y-4y) (Pre-school)</td><td colspan="4">Starts to fit shapes into board puzzles or shape sorters.
Begins to build using simple blocks.
Fills and empties a container.</td><td colspan="4">Shows some understanding of 'now' and 'next'.
Sees some shapes in pictures and can start to make pictures using shapes.
Asks questions about the routine and what is happening next.
Uses small world play to experiment with size, shape, differences and similarities.
Talks about and explore 2D and 3D shapes (e.g. circles, rectangles, triangles and cuboids) using informal and mathematical language: 'sides', 'corners'; 'straight', 'flat', 'round'.
Understands position through words alone – (e.g. "The bag is under the table,") –without pointing.
Describes a familiar route.
Discusses routes and locations, using words like 'in front of' and 'behind'.
Makes comparisons between objects relating to size
Makes comparisons between objects relating to length,
Makes comparisons between objects relating to weight
Makes comparisons between objects relating to capacity.
Selects shapes appropriately (flat surfaces for building, a triangular prism for a roof etc.)
Combines shapes to make new ones – (an arch, a bigger triangle etc.)</td><td colspan="4">Talks about the routine of the day and use language like 'before' and 'after'.
Uses comparative language like 'taller', 'shorter', 'the same'.
<u>Geometry – properties of shapes</u>
Starts to identify shapes in the environment.
Starts to find appropriate shapes for certain tasks.
Asks questions about my observations of differences and similarities.
<u>Geometry – position and direction</u>
Starts to make more meaningful pictures, patterns and arrangements with shapes.</td></tr>
</table>



Reception (4-5 years)

Mathematics: Number and Numerical Patterns - White Rose Maths

Number ELG:

- *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:

- *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.*

		Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Number and Numerical Patterns	Number and Place Value	Counts up to three or four objects by saying one number name for each item. Selects the correct numeral to represent 1 to 5 Counts objects to 5 and begin to count to 10 *Begins to Subitise numbers to 3* *Counts objects, actions and sounds.* *Links the number symbol (numeral) with its cardinal number value. 1-5* *Understands the 'one more than/one less than' relationship between consecutive numbers 0-5.*		Counts out up to six objects from a larger group. Selects the correct numeral to represent 1 to 10 objects. Counts objects to 10 and begin to count beyond 10 Counts an irregular arrangement of up to ten objects. Finds one more or one less from a group of up to five objects, then ten objects. Estimates how many objects I can see and check by counting them. Uses the language of 'more' and 'fewer' to compare two sets of objects. Fully understand 5, 6, 7 etc. and all manipulations of the number. *Begins to Subitise numbers to 6 (dice and five frames/ten frames)* *Link the number symbol (numeral) with its cardinal number value. 5-10* *Rote counts beyond 10 to 20* *Compares numbers within 10* *Continues, copies and creates repeating patterns.*		Subitises numbers to 20 (*dice and five frames/ten frames)* Selects the correct numeral to represent 1-20 objects Begins to use 'teens' to count beyond 10. Fully understand numbers to 10 and all manipulations of the number. *Link the number symbol (numeral) with its cardinal number value. (teen numbers)*	Number ELG: • *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: • *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.*
	Calculation	Recognises some numerals of personal significance		Finds the total number of items in two groups by counting all of them Begins to use the vocabulary involved in adding and subtracting Understands addition up to 5 using all combinations. Then 6, 7, 8, 9, 10. *Explores the composition of numbers to 10.* *Automatically recalls number bonds for numbers 0–10.*		Finds the total of two groups, using 'counting on'. Adds and subtracts by counting on and back to find the answer	
	Fractions			Makes pairs knowing that a pair is two (usually identical but not always) things together		Shows some understanding of doubling and halving in familiar contexts	

Mathematics: Measures, Shape and Spatial Thinking – White Rose Maths							
		Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Shape Space and Measure	Measurement	Talks about the routine of the day and use language like before, after, next, then. Compares mass using heavier, lighter, heaviest, lightest Compares size using taller, shorter, longer smaller Compares capacity using full, empty, nearly full, nearly empty, half full		Experiments with length, height, capacity Uses my findings to order and group items *Compares length, weight and capacity.* Recalls routines and relates them to time of the day e.g. morning routine, night time routine		Identifies money and starts to use money in play. Recalls routines and starts to relate them to the time on the clock. (o'clock)	
	Geometry – Properties of Shapes	Identifies shapes in the environment (circles, triangles, squares & rectangles) Finds appropriate shapes for certain tasks. Begins to recognise patterns		Asks questions about their observations of differences and similarities. Recalls names for 2D and 3D shapes Uses some of the vocabulary to describe shapes properties e.g. corners, sides, points, edges, faces. Orders and sorts according to simple properties.		*Composes and decomposes shapes so that children recognise a shape can have other shapes within it, just as numbers can.* *Copies, continues and creates a widening range of repeating patterns and symmetrical constructions.*	
	Geometry – Position and Direction	Starts to make more meaningful pictures, patterns and arrangements with shapes.		Notices similarities, differences, patterns and changes. Uses the language of direction when programming toys		*Selects, rotates and manipulates shapes in order to develop spatial reasoning skills.* *Matches and sorts models and arrangements by rotating and manipulating shapes* *Makes maps and plans to represent places and use these to see where things are in relation to other things*	