



# Whiston Willis Primary Academy

At Whiston Willis Primary Academy, pupils are taught through whole class interactive teaching, where the focus is on all pupils working together, on the same lesson content, at the same time. This ensures that all children can master concepts before moving to the next part of the curriculum sequence, allowing no pupil to be left behind. We strongly believe that our curriculum should reflect the mastery approach, researched and developed with the support of the NCETM Mastery Hub. Mastery is an approach to mathematics that incorporates 5 main ideas: variation, representation and structure, fluency, mathematical thinking and coherence.

## **Nursery**

Within nursery we begin to develop the foundational knowledge that the children will need as they progress through to reception and begin the NCETM Mastering Number Programme. The key knowledge children will leave our nursery with, are:

- Recognition of up to 3 objects, without having to count them individually (**Subitising/Fluency**)
- Recite numbers past 5 - 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: 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. - **Composition** -Solve real world mathematical problems with numbers up to 5. - **Compare quantities** using language: 'more than', 'fewer than'. Make comparisons between objects relating to size, length, weight and capacity. 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'. - 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. - Begin to describe a sequence of events, real or fictional, using words such as 'first', 'then...'

## **Reception**

Within reception the children now start to follow the NCETM Mastering Number Programme where the strands of learning prepare the children to master concepts needed for future learning. The children get to practice and embed knowledge and skills throughout each term which fit into the 5 main ideas; variation, representation and structure, fluency, mathematical thinking and coherence which are the 5 main areas incorporated into future learning.

**Variation:** the children will consolidate their understanding of concepts previously taught through working in a variety of contexts and with different numbers.

**Representation and structure:** Concrete, Pictorial , Abstract- Children are provide with repeated opportunities to work with concrete objects such as 5 frames, counters, interlock cubes and many other resources. We explore many different ways of representing our findings through using our fingers, images or drawings and then move onto number sentences and word problems (mental maths/ oracy)

**Fluency:** Practicing quick number recall and number bonds is one of the main objectives we practice regularly. Subitising and recognizing patterns is threaded throughout.

**Mathematical thinking and coherence:** Connections are threaded through the programme and questioning and repetition ensure key knowledge and skills are embedded.



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## Foundational Knowledge and Number Sense -Nursery

Strand/ Half-term	Subitising	Cardinality, ordinality and counting	Composition	Comparison
1 Nursery Children will: Strand Pattern		<ul style="list-style-type: none"> <li>* Daily counting</li> <li>*Daily number rhymes</li> <li>* "5 fine friends"</li> <li>*"Heart Maths" challenges</li> <li>*Recognise, copy create AB etc sound /colour/body/shape object patterns.</li> </ul>	*IWB "Teddy bear" (counting sets of 1/2)	<ul style="list-style-type: none"> <li>*Sorting by size, colour, texture</li> <li>*IWB "Teddy bear" (counting sets of 1/2)</li> </ul>
2 Nursery Children will: Strand Comparison	<ul style="list-style-type: none"> <li>*Explore numbers 1 and 2</li> <li>*Subitise/represent 1, 2, 3</li> </ul>	<ul style="list-style-type: none"> <li>*Daily number rhymes</li> <li>*Counting forwards and backwards</li> <li>*Autumn leaf peg challenge</li> <li>*Maths through a story – Squirrel's Store</li> </ul>		<ul style="list-style-type: none"> <li>*Sort and categorise Autumn objects by property</li> <li>*Count and compare equal/different quantities of</li> </ul>
3 Nursery Children will: Strand Composition	*Subitise/represent 1, 2, 3	<ul style="list-style-type: none"> <li>*Daily number rhymes</li> <li>*5 Xmas presents underneath the tree</li> <li>*Ordinal number 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup></li> <li>*Maths through a story – Goldilocks and the 3 bears</li> </ul>	<ul style="list-style-type: none"> <li>*5 little snowmen</li> <li>*Explore number 3</li> <li>*Composition of 1,2,3</li> <li>*Shiny objects maths challenges</li> </ul>	*Comparing sizes, using language of size
4 Nursery Children will: Strand Measurement	*Subitise/represent 1, 2, 3	*Develop counting on and back through number 5 number rhymes	*Sort, group, count seeds, pots, flowers	<ul style="list-style-type: none"> <li>*Measuring</li> <li>*Order and compare height, length, capacity, mass, weight, time, money</li> </ul>
5 Nursery Children will: Strand SSM	*Subitise/represent 1, 2, 3	<ul style="list-style-type: none"> <li>*Develop counting on, back using "Hungry Caterpillar" story</li> <li>*Count fruits in story</li> <li>*Use tape measures to measure growth of plants</li> <li>*Count bricks 1-1 to make towers</li> </ul>		<ul style="list-style-type: none"> <li>*compare sizes</li> <li>*explore patterns and shapes on buildings</li> <li>*Recognise 2D shapes and describe explore patterns and shapes on buildings</li> </ul>
6 Nursery Children will: Strand Cardinality	*count and subitise	<ul style="list-style-type: none"> <li>*Number/shape hunt</li> <li>*Use and develop positional language linked to story "Rosie's Walk"</li> <li>*Cardinality and counting- Know quantity and how manyness</li> <li>*Know last number in the set</li> <li>*Numeral meanings</li> </ul>		



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## Mastering Number: Overview of content – Reception

Strand/ Half-term	Subitising	Cardinality, ordinality and counting	Composition	Comparison
1  Children will:	<ul style="list-style-type: none"> <li>perceptually subitising within 3 - <b>F</b></li> <li>identify sub-groups in larger arrangements – <b>F/MT</b></li> <li>create their own patterns for numbers within 4 – <b>MT/V</b></li> <li>practise using their fingers to represent quantities which they can subitise – <b>F/MV</b></li> <li>experience subitising in a range of contexts, including temporal patterns made by sounds. – <b>R&amp;S</b></li> </ul>	<ul style="list-style-type: none"> <li>relate the counting sequence to cardinality, seeing that the last number spoken gives the number in the entire set - <b>F</b></li> <li>have a wide range of opportunities to develop their knowledge of the counting sequence, including through rhyme and song – <b>F/R&amp;S</b></li> <li>have a wide range of opportunities to develop 1:1 correspondence, including by coordinating movement and counting – <b>F/R&amp;S</b></li> <li>have opportunities to develop an understanding that anything can be counted, including actions and sounds – <b>F/V/R&amp;S</b></li> <li>explore a range of strategies which support accurate counting – <b>F/MT/V</b></li> </ul>	<ul style="list-style-type: none"> <li>see that all numbers can be made of 1s – <b>F/V</b></li> <li>compose their own collections within 4. – <b>MT/F</b></li> </ul>	<ul style="list-style-type: none"> <li>understand that sets can be compared according to a range of attributes, including by their numerosity – <b>MT/V</b></li> <li>use the language of comparison, including 'more than' and 'fewer than' – <b>F</b></li> <li>compare sets 'just by looking'. – <b>MT/R&amp;S/F</b></li> </ul>
2  Children will:	<ul style="list-style-type: none"> <li>continue from first half-term</li> <li>subitise within 5, perceptually and conceptually, depending on the arrangements.</li> </ul>	<ul style="list-style-type: none"> <li>continue to develop their counting skills</li> <li>explore the cardinality of 5, linking this to dice patterns and 5 fingers on 1 hand</li> <li>begin to count beyond 5</li> <li>begin to recognise numerals, relating these to quantities they can subitise and count.</li> </ul>	<ul style="list-style-type: none"> <li>explore the concept of 'wholes' and 'parts' by looking at a range of objects that are composed of parts, some of which can be taken apart and some of which cannot</li> <li>explore the composition of numbers within 5.</li> </ul>	<ul style="list-style-type: none"> <li>compare sets using a variety of strategies, including 'just by looking', by subitising and by matching</li> <li>compare sets by matching, seeing that when every object in a set can be matched to one in the other set, they contain the same number and are equal amounts.</li> </ul>
3  Children will:	<ul style="list-style-type: none"> <li>increase confidence in subitising by continuing to explore patterns within 5, including structured and random arrangements</li> <li>explore a range of patterns made by some numbers greater than 5, including structured patterns in which 5 is a clear part</li> <li>experience patterns which show a small group and '1 more'</li> <li>continue to match arrangements to finger patterns.</li> </ul>	<ul style="list-style-type: none"> <li>continue to develop verbal counting to 20 and beyond</li> <li>continue to develop object counting skills, using a range of strategies to develop accuracy</li> <li>continue to link counting to cardinality, including using their fingers to represent quantities between 5 and 10</li> <li>order numbers, linking cardinal and ordinal representations of number.</li> </ul>	<ul style="list-style-type: none"> <li>continue to explore the composition of 5 and practise recalling 'missing' or 'hidden' parts for 5</li> <li>explore the composition of 6, linking this to familiar patterns, including symmetrical patterns</li> <li>begin to see that numbers within 10 can be composed of '5 and a bit'.</li> </ul>	<ul style="list-style-type: none"> <li>continue to compare sets using the language of comparison, and play games which involve comparing sets</li> <li>continue to compare sets by matching, identifying when sets are equal</li> <li>explore ways of making unequal sets equal.</li> </ul>



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<p>4</p> <p><b>Children will:</b></p>	<ul style="list-style-type: none"> <li>explore symmetrical patterns, in which each side is a familiar pattern, linking this to 'doubles'.</li> </ul>	<ul style="list-style-type: none"> <li>continue to consolidate their understanding of cardinality, working with larger numbers within 10</li> <li>become more familiar with the counting pattern beyond 20.</li> </ul>	<ul style="list-style-type: none"> <li>explore the composition of odd and even numbers, looking at the 'shape' of these numbers</li> <li>begin to link even numbers to doubles</li> <li>begin to explore the composition of numbers within 10.</li> </ul>	<ul style="list-style-type: none"> <li>compare numbers, reasoning about which is more, using both an understanding of the 'howmanyness' of a number, and its position in the number system.</li> </ul>
<p>5</p> <p><b>Children will:</b></p>	<ul style="list-style-type: none"> <li>continue to practise increasingly familiar subitising arrangements, including those which expose '1 more' or 'doubles' patterns</li> <li>use subitising skills to enable them to identify when patterns show the same number but in a different arrangement, or when patterns are similar but have a different number</li> <li>subitise structured and unstructured patterns, including those which show numbers within 10, in relation to 5 and 10</li> <li>be encouraged to identify when it is appropriate to count and when groups can be subitised.</li> </ul>	<ul style="list-style-type: none"> <li>continue to develop verbal counting to 20 and beyond, including counting from different starting numbers</li> <li>continue to develop confidence and accuracy in both verbal and object counting.</li> </ul>	<ul style="list-style-type: none"> <li>explore the composition of 10.</li> </ul>	<ul style="list-style-type: none"> <li>order sets of objects, linking this to their understanding of the ordinal number system.</li> </ul>
<p>6</p>	<p>In this half-term, the children will consolidate their understanding of concepts previously taught through working in a variety of contexts and with different numbers.</p>			