St. Andrew's Church of England Primary School – Reception Mathematics Overview

Mathematics Skills Progression

'Mastering Number' programme (NCETM) forms the curriculum.

AUTUMN	SPRING	SUMMER
Number & Numerical Patterns / Spatial Reasoning Pupils will build on previous experiences of number, and further develop their subitising and counting skills. They will explore the composition of numbers within 5, and connect the concept of 'parts' and 'whole' to objects and number. They will develop skills in noticing and visualising and begin to compare sets of objects and use the language of comparison. As they move themselves through space, they will develop their understanding of relevant spatial language. Pupils will: • identify when a set can be subitised and when counting is needed • subitise different arrangements, both unstructured and structured, including using the Hungarian number frame • make different arrangements of numbers within 5 and talk about what they can see, to develop their conceptual subitising skills • spot smaller numbers 'hiding' inside larger numbers	**Number & Numerical Patterns / Spatial Reasoning** Pupils will continue to develop skills in noticing and visualising; sorting shapes according to their attributes. They will develop their subitising and counting skills and explore the composition of numbers within and beyond 5. They will begin to explore and identify when objects or sets are equal or unequal and connect two equal groups to doubles. They will begin to connect quantities to numerals. Pupils will: • continue to notice similarities and differences • identify and describe some 2d and 3d shapes • continue to develop their subitising skills for numbers within and beyond 5, and increasingly connect quantities to numerals • begin to identify missing parts for numbers within 5	**Number & Numerical Patterns / Spatial Reasoning** Pupils will continue to develop their skills in noticing and visualising, when engaging with pattern work. They will apply their understanding of equal/not equal and prepositional language when working with a range of measures. They will consolidate their counting skills, counting to larger numbers and developing a wider range of counting strategies. Pupils will secure knowledge of number facts through varied practice. Pupils will: • explore a range of pattern making skills, copying, continuing and creating their own patterns • continue to develop their counting skills, counting larger sets as well as counting actions and sounds

• connect quantities and numbers to finger patterns and explore different ways of representing numbers on their fingers • hear and join in with the counting sequence, and connect this to the 'staircase' pattern of the counting numbers, seeing that each number is made of one more than the previous number • develop counting skills and knowledge, including: that the last number in the count tells us 'how many' (cardinality); to be accurate in counting, each thing must be counted once and once only and in any order; the need for 1:1 correspondence; understanding that anything can be counted, including actions and sounds • compare sets of objects by matching • begin to develop the language of 'whole' and 'parts' when talking about objects and numbers • use gestures to develop their understanding and use of a range of spatial language, including the prepositions: in, on, under, next to, between, in front of, and behind, and language related to movement, including: turn, flip.	• explore the structure of the numbers 6 and 7 as '5 and a bit' and connect this to finger patterns and the Hungarian number frame • focus on equal and unequal, initially with blocks and then when comparing numbers up to 10. • understand that two equal groups can be called a 'double' and connect this to finger patterns • sort odd and even numbers according to their 'shape' • continue to develop their understanding of the counting sequence and link cardinality and ordinality through the 'staircase' pattern • order numbers and play track games • join in with verbal counts beyond 20, hearing the repeated pattern within the counting numbers	• explore a range of representations of numbers, including the 10-frame, and see how doubles can be arranged in a 10-frame • compare lengths, heights and mass, noticing similarities and differences and using prepositional language to describe these • compare quantities and numbers, including sets of objects which have different attributes • continue to develop a sense of magnitude, e.g., knowing that 8 is quite a lot more than 2, but 4 is only a little bit more than 2 • begin to generalise about 'one more than' and 'one less than' numbers within 10 • continue to identify when sets can be subitised and when counting is necessary • develop conceptual subitising skills including when using a rekenrek.
Key Vocabulary		
Number more than, fewer, next, number, whole, parts **Numerical Patterns** one, two, three to ten, show me, fingers, numerals, how many, estimate, guess, count, subitise	**Number** number bonds, add, more, sum, total, subtract, take away, difference between, altogether, how many?, more than, less than, fewer, the same as, equal to, double, one to twenty (and beyond)	**Number** number bonds, add, more, sum, total, subtract, take away, difference between, altogether, how many?, more than, less than, fewer, the same as, equal to, double, half, sharing

Shape, Space and Measures / Spatial Reasoning circle, square, shape, triangle, rectangle, under, in, on, up, down, besides, between, in front of, behind, turn, flip, sides, corners, straight, flat, round, curved, bigger, smaller, heavier, lighter, pattern, sort, Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday, First, then, after	**Numerical Patterns** zero, one, two to 10 and beyond, more, less, count, numeral, one more, one less, count, number line, sort, odd, even **Shape, Space and Measures / Spatial Reasoning** First, then, after, before, every day, morning, afternoon, evening, night-time, earlier, later, too late, soon, in a minute, clock, yesterday, tomorrow, circle, square, triangle, rectangle, 2D, 3D, cube, pyramid, sphere, cone, face, edge, vertex/vertices, corner, side, flat, curved	**Numerical Patterns** zero, one, two to 20 and beyond, greater than, less than, equal to/the same as, teen, tens, ones, odd, even, double, half, equal **Shape, Space and Measures** circle, square, triangle, rectangle, quick, slow, 2D, 3D, cube, pyramid, sphere, cone, rotate, pattern, repeating, mass, heavier, lighter, longer, length, height, shorter, more, less, full, empty, long/longer/longest etc.

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 2020)

DfE/NCETM Guidance – Ready to Progress Criteria – Year 1-ready

In order to be ready to begin the Y1 programme of study, by the end of reception children should be able to meet the criteria outlined below each topic. Coverage of these areas has been a key inclusion within the Reception overview as above.

Number and place value

• Begin to develop a sense of the number system by verbally counting forward to and beyond 20, pausing at each multiple of 10.

• Play games that involve moving along a numbered track and understand that larger numbers are further along the track.

• Begin to experience partitioning and combining numbers within 10.

• Distribute items fairly, for example, put 3 marbles in each bag. Recognise when items are distributed unfairly.

Addition/Subtraction

• Understand the cardinal value of number words, for example understanding that 'four' relates to 4 objects. Subitise for up to 5 items. Automatically show a given number using fingers.

• Devise and record number stories, using pictures, numbers, and symbols (such as arrows). **NB: focus on <u>correct formation of numbers in Summer Term</u>**

Geometry/Shape/ Spatial Reasoning

• See, explore and discuss models of common 2D and 3D shapes with varied dimensions and presented in different orientations (for example, triangles not always presented on their base).

• Select, rotate and manipulate shapes for a particular purpose, for example, rotating a cylinder so it can be used to build a tower / rotating a puzzle piece to fit in its place.