



## Mathematics Intent

At Canonbury, our mathematics curriculum inspires pupils with curiosity and a love of maths through challenging, active lessons in which all pupils can succeed. Our curriculum:

- enables pupils to reason mathematically and to become excited by mathematical patterns
- makes connections with everyday situations so that pupils see maths skills as fundamentally useful for real life
- provides pupils with the with the firm foundations they need for secondary school and beyond

Lessons are carefully sequenced and significant time is spent ensuring children have a deep, sustained knowledge of **mathematical concepts** so that secure building blocks are in place. We use a **concrete-pictorial-abstract** approach, using hands on resources and visuals alongside mental maths when embedding concepts and skills. Pupils are challenged with **sophisticated problems** so that they acquire “mastery” before new content is introduced, learning to **work systematically**. Those who are not sufficiently fluent consolidate their understanding through additional practice.

We value the importance of spoken language in our maths lessons and aim to develop pupils’ ability to **explain** their mathematical thinking. Through working with others and verbal **reasoning**, pupils learn to see the relationship between numbers and to **make connections** across mathematical ideas.

We value making mistakes as part of the learning process, encouraging pupils to feel **safe to have a go**.

Our curriculum makes the most of opportunities to use **maths in other subjects**, so that children understand how vital these skills are for understanding the world.

In line with the National curriculum (2014), all pupils:

- become fluent in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.
- reason mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language
- can solve problems by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.

We dedicate time to learning number facts to secure them in pupils’ long term memory. As pupils progress through the school, they will apply their knowledge of number bonds and related number facts to solve problems with versatility, selecting the most efficient approach.

We place great importance on consistent, clear written methods, as set out in our Calculation Policy.

We strive for our pupils to know more, do more and remember more as a basis of all our curriculum topics. Oral rehearsal, learning revisits and high pupil engagement is at the heart of enabling this at Canonbury.

## **Early Years**

Our Early Years curriculum ensures children develop a strong grounding in number through concrete activities as part of their play.

Children learn strategies to count accurately and become familiar with different representations of numbers, including Numicon, dice, tens frames and their fingers.

By giving the children real life situations to use number skills, such as cooking, we ensure they make connections with the real world and see maths as fun. Adults introduce mathematical concepts to child-led play, encouraging children to talk about what they notice.

Children develop a deep understanding of the numbers to 10 and beyond, learning to look at a group of objects and see how many there are without counting, find patterns, see relationships between numbers and spot connections. This is achieved through hands on resources, with Numicon as the main focus: this resource is used in imaginative ways, including in sand, water, playdough and paint.

Through rhymes, songs and reciting numbers as part of daily routines, children learn the sequence of numbers both forwards and backwards. Our Early Years environment is carefully organised so that children experience shape, space and measure in a variety of contexts, developing their spatial reasoning skills.

From the beginning of Nursery to the end of Reception, our maths curriculum builds incrementally, giving children time to embed concepts before making connections with new learning.

## **KS1**

In Key Stage One we continue to teach Maths in a relevant, fun, hands-on way. It builds on learning from the Early Years to develop confidence and mental fluency with whole numbers, counting and place value. We allow time to practice and develop fluency before moving learning on, developing the children's application of mathematical understanding through problem solving and reasoning.

By the end of Year 2, pupils are secure in their number bonds to 20, have a solid understanding of place value and understand the four operations. Through the continued use of hands on resources, our pupils grasp abstract concepts. Whilst Numicon continues to be the main resource, we ensure children are exposed to a range of representations of number patterns.

In Year 1, pupils learn to draw pictorial representations so that, by the end of year 2, they are confident to do jottings and drawings to support problem solving. We use the part-whole bar model to ensure pupils gain a thorough understanding of the relationship between numbers.

Children learn to read and write numbers in numerals and words. Shape, space and measure are taught in meaningful contexts with real life resources.

Pupils explore mathematical concepts through partner and group work, enabling them to take risks and explain their mathematical thinking to others. By the end of Key Stage One, our pupils see themselves as mathematicians and are keen to progress.

## Key Stage Two

### Years 3 and 4

In Years 3 and 4, there is a continued focus on using hands on resources to embed understanding, including Base 10 sticks and counters to ensure the concept of place value is completely secure (including decimal place value).

Pupils become fluent with whole numbers, simple fractions and the four operations. Through repetition and practise, children develop precision and fluency with their times tables to 12. Key calculation skills and number facts are refreshed and consolidated in the lesson starter. Pupils become confident to draw their own bar models to solve a range of problems, taking information from the question to visualise which calculation is needed. This enables them to use efficient written and mental methods.

Wherever possible, shape and measure are taught through practical activities and pupils learn to draw with increasing accuracy to analyse their properties.

### Years 5 and 6

In Years 5 and 6, pupils continue to extend their understanding of number to include larger integers. They become confident in using the part-whole and comparison bar models to make connections between multiplication and division with whole numbers, fractions, decimals, percentages and ratio.

Pupils learn reliable methods to calculate with accuracy, including long multiplication and division. They develop systematic methods to find all possible answers and become confident to choose the most efficient written or mental method of calculation. They continue to use hands on resources to visualise abstract concepts, such as Cuisinere for algebra. This enables them to make pictorial drawings to deconstruct increasingly complex problems.

In geometry and measure, pupils build on their number knowledge, draw and record accurately and classify complex shapes.

By the end of Year 6, pupils at Canonbury are fluent in written methods for the four operations and confident with fractions, decimals and percentages. They are able to apply these to problem solving, not only in their KS2 SATs but in practical, real life situations. Pupils leave Canonbury secure in their mathematical understanding and equipped with reliable skills which stand them in good stead for secondary school and their future lives.

Throughout Key Stage Two, there is an emphasis on opportunities for talk which develop the children's ability to explain their thinking with increasing mathematical vocabulary.



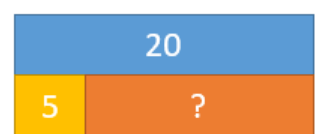
Numicon



Cuisenere



Base 10



Bar Model