CURRICULUM PROVISION AT CALMORE INFANT SCHOOL

CURRICULUM AREA MATHEMATICS

Purpose of Study:

Mathematics is a creative and highly interconnected discipline that has been developed over centuries. It is essential to everyday life, critical to science, technology and engineering, and necessary for financial literacy and most forms of employment. A high-quality mathematics education therefore provides a foundation for understanding the world and the ability to reason mathematically.

At Calmore, we aim to teach children to move fluently between the stages of concrete, pictorial and formal methods of representing mathematical problems. We have organised our programmes of study into distinct domains but will teach children to make connections across mathematical ideas to develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems.

Throughout our curriculum, children will apply what they have learnt in other subjects. We expect that the majority of pupils will move through the programmes of study at broadly the same pace. However, continuous assessment for learning will determine the security of children's understanding and their readiness to progress to the next stage.

Children with secure understanding will be challenged through rich and sophisticated problems before moving onto new content. Those who are not confident with domain content will be supported to consolidate their understanding through additional precision teaching before moving on.

We aim for children to leave Calmore with a secure understanding of the mathematics curriculum content and a sense of enjoyment and curiosity about the subject.

National Curriculum Provision

Aims: The national curriculum for Mathematics aims to ensure that 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.

CURRICULUM PROVISION AT CALMORE INFANT SCHOOL

Subject Content KS1

The principal focus of mathematics teaching in key stage 1 is to ensure that pupils develop confidence and mental fluency with whole numbers, counting and place value. This should involve working with numerals, words and the four operations, including with practical resources [for example, concrete objects and measuring tools].

At this stage, pupils should develop their ability to recognise, describe, draw, compare and sort different shapes and use the related vocabulary. Teaching should also involve using a range of measures to describe and compare different quantities such as length, mass, capacity/volume, time and money.

By the end of year 2, pupils should know the number bonds to 20 and be precise in using and understanding place value. An emphasis on practice at this early stage will aid fluency.

Pupils should read and spell mathematical vocabulary, at a level consistent with their increasing word reading and spelling knowledge at key stage 1.

Programmes of Study Year 1.
Pupils will be taught about:

Number- number and place value

- Count to and across 100, forwards and backwards, beginning with 0 or 1 , or from any 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

Number – 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 problem such as 7= ?-9

CURRICULUM PROVISION AT CALMORE INFANT SCHOOL

Number – 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.

Number - fractions

- recognise, find and name a half as one of two equal parts of an object, shape or quantity
- recognise, find and name a quarter as one of four equal parts of an object, shape or quantity.

Measurement

- compare, describe and solve practical problems for:
- lengths and heights [for example, long/short, longer/shorter, tall/short, double/half]
- measure and begin to record the following; mass/weight [for example, heavy/light, heavier than, lighter than], capacity and volume [for example, full/empty, more than, less than, half, half full, quarter], time [for example, quicker, slower, earlier, later]
- recognise and know the value of different denominations of coins and notes
- sequence events in chronological order using language [for example, 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
- time (hours, minutes, seconds), tell the time to the hour and half past the hour and draw the hands on a clock face to show these times.

Geometry – properties of shapes

- recognise and name common 2-D and 3-D shapes, including:
- 2-D shapes [for example, rectangles (including squares), circles and triangles]
- 3-D shapes [for example, cuboids (including cubes), pyramids and spheres].

Geometry – position and direction

- describe position, direction and movement, including whole, half, quarter and three-quarter turns.

CURRICULUM PROVISION AT CALMORE INFANT SCHOOL

Programmes of Study Year 2. Pupils will be taught about:

Number- number and place value

count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward

- recognise the place value of each digit in a two-digit number (tens, ones)
- identify, represent and estimate numbers using different representations, including the number line
- compare and order numbers from 0 up to 100; use <, > and = signs
- read and write numbers to at least 100 in numerals and in words
- use place value and number facts to solve problems.

Number – addition and subtraction

- solve problems with addition and subtraction:
- using concrete objects and pictorial representations, including those involving numbers, quantities and measures
- applying their increasing knowledge of mental and written methods
- recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100
- add and subtract numbers using concrete objects, pictorial representations, and mentally, including:
- a two-digit number and ones, a two-digit number and tens, two two-digit numbers, adding three one- digit numbers
- show that addition of any to numbers can be done in any order (commutative) and division of one number by another cannot.
- Solve problems involving multiplication and division, using arrays, materials, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.
- recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers
- calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs
- show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot
- solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.

Number - fractions

- recognise, find and name and write fractions 1/3 ¼. 2/4 and ¾ of a length, shape, set of objects or quantity
- write simple fractions for example ½ of 6=3 and recognise the equivalence of 2/4 and ½.

CURRICULUM PROVISION AT CALMORE INFANT SCHOOL

Measurement

- choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g);
- temperature (°C); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels
- compare and order lengths, mass, volume/capacity and record the results using >, < and =
- recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value
- find different combinations of coins that equal the same amounts of money
- solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change
- compare and sequence intervals of time
- tell and write the time to five minutes, including quarter past/to the hour and draw the hands on a clock face to show these times
- know the number of minutes in an hour and the number of hours in a day.

Geometry – properties of shapes

- identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line
- identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces
- identify 2-D shapes on the surface of 3-D shapes [for example, a circle on a cylinder and a triangle on a pyramid]
- compare and sort common 2-D and 3-D shapes and everyday objects.

Geometry – position and direction

- order and arrange combinations of mathematical objects in patterns and sequences
- use mathematical vocabulary to describe position, direction and movement, including movement in a straight line and distinguishing between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anti-clockwise).

Statistics

- interpret and construct simple pictograms, tally charts, block diagrams and simple tables
  ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity
- ask and answer questions about totalling and comparing categorical data.