The intention, implementation and impact of Maths at Alton Infant School.

Aims and Intention

At Alton Infant School, our aim is to ensure that all children have the best foundation in Mathematics. We give the children a solid foundational understanding of number, the four main mathematical operations (addition, subtraction, multiplication and division), fractions, shape, measures, position and direction. Through Mathematics, we actively aim to provide a relevant, challenging and enjoyable mathematics curriculum for all children. Children develop the use of mathematical language through speaking and listening, reasoning and explanatory. This will enable and allow the children to appreciate the importance of Mathematics in everyday situations.

We develop the pupils' mathematical confidence through a build-up of skills and understanding and aim for mathematics to be an enjoyable subject that teaches key skills for life.

Implementation and how it is taught

At Alton Infant School, we are currently at the stage of 'Sustaining Mastery of Number' which is part of NCETM (National Centre for Excellence in the Teaching of Mathematics). This helps to develop the 'Mastery Approach' of teaching Mathematics.

In the Foundation Stage, our young mathematicians will be provided with many exciting opportunities through planned, purposeful play and a mix of adult-led and child-initiated activities. To develop and improve their skills in counting, understanding and using numbers, calculating simple addition and subtraction problems; and to describe shapes, space and measure.

Throughout Key Stage 1, we follow the NCETM Spines of Learning which helps to teach a broad and challenging curriculum.

Our Mathematics curriculum provides many opportunities for children to develop confidence and fluency with whole numbers, counting and place value. We ensure children explore the concepts first by using practical equipment, such as concrete objects and measuring tools. This then supports the children to gain a deeper conceptual understanding before being challenged through tasks and questions to explain their reasoning and solve a range of problems. The children are equipped with the skills to recognise shapes and their properties and calculate measures to describe and compare different quantities such as length, mass, capacity/volume, time and money.

The teaching and learning of Mathematics is engaging, creative and through the use of effective teaching strategies and resources, deepens pupil understanding. Opportunities to

practise and apply mathematical skills can also be found within the school's broad and balanced curriculum.

Curriculum Impact

A variety of methods are used to find out what the children know and understand. Lesson activities are **scaffolded** to suit the different **abilities** and **learning styles**. Mathematics lessons allow for collaborative learning and thus encourage children to talk in pairs, small groups or through class discussions, to share learning. For those children who grasp concepts rapidly, they will be challenged through a range of problems, whilst those not sufficiently fluent will be provided with opportunities to consolidate their understanding through additional practice and first response intervention. Children's understanding of taught concepts will be assessed using end of block assessment tasks, which provide opportunities for children to demonstrate their understanding fully. Evidence of the children's learning journey through each Mathematics topic will be recorded in Maths books, working walls and class floor books.

We have developed 'I can...' **assessment** sheets, with statements taken directly from the National Curriculum Programmes of Study. As each unit of work is covered, we consider the related intended learning, recognise children who are working at or beyond the expected level for Key Stage 1, as well as identifying the children who need and who will therefore receive support. Children in the Foundation Stage will be assessed against the **Early Years Learning Goal**.

Mathematics monitoring includes work scrutinies, lesson observations and/or learning walks, pupil voice interviews/questionnaires in order to ascertain correct curriculum coverage, the quality of teaching and learning as well as the children's attitudes to and retention of maths learning. This information is then used to inform further curriculum developments and provision is adapted accordingly.

Year 1

At Alton Infant School, the majority of children reach the expected standard for Year 1 and some children exceed this. By the end of the year, the majority of children are ready to access the Year 2 curriculum for Mathematics, can apply their understanding at an age-appropriate level and have developed a confidence to begin to reason and solve problems.

Year 1 Content

At the end of the year, most children should be able to:

Number and Place Value

- Count to and across 100 forwards and backwards, beginning with 0 or 1, or from any given number
- Count, read, write and order numbers to 100 in numerals
- Read and write numbers from 1 to 20 in words
- Count in different multiples including ones, twos, fives and tens
- Begin to count forwards and backwards in 10s from any number

- Identify one more and one less than a given number
- Identify and represent numbers using concrete objects and pictorial representations
- Use the language of equal to, more than, less than, fewer, most and least
- Recognise and understand odd and even numbers

Calculations

- Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equal (=) signs
- Add and subtract one-digit numbers and two-digit numbers to twenty including zero
- Begin to find ten more and less of a given number
- Represent and learn number bonds for numbers up to and including ten.
- Represent and use number bonds and related subtraction facts within twenty
- Solve simple one step problems that involve addition and subtraction
- Know doubles and halves of numbers to twenty
- Solve simple one-step problems involving multiplication and division using concrete objects, pictorial representations and arrays.

Fractions

- Understand and find ½ of a shape or quantity (Shape, Space and Measures)
- Recognise and name common 2D and 3D shapes and identify their properties
- Describe position, direction and movement including half turns
- Know the days of the week and the months of the year
- Tell the time to the hour and half past the hour
- Use standard measures to measure and compare length, mass, capacity and time
- Recognise all coins
- Total coins up to 20p in practical situations
- Organise and classify data using simple lists and tables

Year 2

At Alton Infant School, the majority of children reach the expected standard in Year 2 and a significant number of children exceed this. This prepares the children well for their next stage of education and they are ready to build on the firm mathematical foundations learnt at Alton Infants. By the end of Year 2, the majority of children have a solid foundational understanding of the different mathematical areas as outlined below. The majority of children are able to confidently apply their understanding and skills and to solve mathematical problems and puzzles. At the end of Year 2, children can also articulate their mathematical understanding clearly and succinctly.

Year 2 Content

At the end of the year, most children should be able to:

Number and Place Value

- Read and write numbers to at least 100 in numerals and words
- Recognise the place value of each digit in a two-digit number (tens and ones)
- Use place value and number facts to solve problems

- Identify, represent and estimate numbers using different representations, including the number line
- Compare and order numbers from 0 up to 100 and use <, > and = signs
- Count in steps of 2,3,5 from 0 and count in tens from any number, forward or backward

Calculations

- Solve simple on-step problems with addition and subtraction using concrete objects, pictorial representations and an 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
- Add and subtract a two-digit number and ones
- Add and subtract a two-digit number and tens
- Add and subtract two two-digit numbers
- Add three one- digit numbers
- Show that addition of two numbers can be done in any order and that subtraction of one number from another cannot
- Recognise and use the inverse relationship between addition and subtraction
- Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables
- Understand the operation of division as equal grouping
- Use the x, ÷ and = symbols in number statements and when solving simple problems

Fractions

- Understand and find ½, ¼, 1/3 and ¾ of a shape or quantity.

Shape, Space and Measure

- Recognise and name regular and irregular 2D and 3D shapes and identify their properties, including right angles and symmetry
- Describe position, direction and movement including rotation, quarter and half turns and clockwise and anti-clockwise turns
- Choose and use appropriate standard measures to measures to measure and compare length, mass, capacity and time
- Read relevant scales to the nearest numbered unit
- Tell and write the time to 5 minutes and quarter past/to the hour
- Recognise and use symbols for £ and p
- Total coins up to £ in practical situations
- Recognise equivalent amounts of money
- Construct and interpret pictograms, tables and simple graphs

At the end of the year, some children could:

Number and Place Value

- Recognise the place value of each digit in a three – digit number (hundreds, tens and ones)
- Compare and order numbers to 1000
- Read and write numbers to at least 1000 in numerals and words
- Count from 0 in multiples of 4, 8, 50 and 100.
- Solve number problems and practical problems using these ideas

Calculations

- Add and subtract numbers mentally including a three –digit number and ones, a three- digit number and tens and a three- digit number and hundreds
- Add and subtract numbers with up to three digits using efficient written methods
- Estimate the answer to a calculation and use inverse operations to check answers
- Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction
- Recall and use multiplication and division facts for the 3,4 and 8 multiplication tables
- Begin to multiply a two-digit number by a one-digit number using efficient written methods
- Solve problems, including missing number problems, involving multiplication and division

Fractions

- Understand and find ¾ and 1/3 of a shape or quantity
- Begin to understand equivalent fractions

Shape, Space and Measure

- Recognise right angles as a quarter turn
- Begin to understand equivalent standard units of measure
- Add and subtract amounts of money and give change in £ and p

Handling Data

- Solve problems using information presented in pictograms, bar charts and tables.

Explore   *Draw*   *Calculate*