**Mathematics Curriculum Intent**

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| Maths Intent | Reception | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
| The intent of our Mathematics curriculum is for a curriculum which is accessible to all and will maximise the development of every child’s ability and academic achievement.  We will deliver lessons that are creative and engaging. We want children to make connections across mathematical ideas to develop fluency, mathematical reasoning and competence in solving increasingly complex problems.  We intend for our pupils to be able to apply their mathematical knowledge to Science and other subjects. We want children to realise that Mathematics has been developed over centuries, it is essential to everyday life, critical to science, technology and engineering and most forms of employment.  As our pupils progress, we intend for our pupils to be able to understand the world, have the ability to reason mathematically and have a sense of enjoyment and curiosity about the subject. | In Early Years, Mathematics involves providing children with opportunities to develop and improve their skills in counting, understanding and using numbers, calculating simple addition and subtraction problems and to describe shapes, space and measures.  Children will learn to count reliably with numbers from 0-20, place them in order and say which is one more or one less. They can add and subtract 2 single digit numbers and count on or back to find the answer using quantities and objects. Children will solve problems, including doubling, halving and sharing.  Children will use everyday language to talk about size, weight, capacity, position, distance, time and money. Children will recognize, create and describe patterns. They will explore the characteristics of everyday objects and shapes and use mathematical language to describe them. | In Year 1, children practise counting, ordering, including solving simple concrete problems, until they are fluent. Pupils begin to recognise place value in numbers beyond 20 by reading, writing, counting and comparing numbers up to 100, supported by objects and pictorial representations. They practise counting as reciting numbers, counting in twos, fives and tens from different multiples to develop their recognition of patterns in the number system including odd and even numbers. They recognise and create repeating patterns with objects and with shapes.  Through grouping and sharing small quantities, children begin to understand: multiplication and division; doubling numbers and quantities; and finding simple fractions of objects, numbers and quantities.  Children move from using and comparing different types of quantities and measures using non-standard units, to using manageable common standard units. Children use the language of time, including telling the time throughout the day, first using o’clock and then half past.  Children handle common 2-D and 3-D shapes, naming these and related everyday objects fluently. They recognise these shapes in different orientations and sizes.  Children use the language of position, direction and motion. | In Year 2, children practise counting, reading, writing and comparing numbers to at least 100 and solving a variety of related problems to develop fluency. They count in multiples of three to support their later understanding of a third. As they become more confident with numbers up to 100, children are introduced to larger numbers to develop further their recognition of patterns within the number system and represent them in different ways. Recording addition and subtraction in columns supports place value and prepares for formal written methods with larger numbers. Children are introduced to the multiplication tables. They practise to become fluent in the 2, 5 and 10 multiplication tables and connect them to each other. They begin to use other multiplication tables and recall multiplication facts, including using related division facts to perform written and mental calculations.  Children use fractions as ‘fractions of’ discrete and continuous quantities by solving problems using shapes, objects and quantities.  Children use standard units of measurement with increasing accuracy, using their knowledge of the number system. They use the appropriate language and record using standard abbreviations. They become fluent in telling the time on analogue clocks and recording it. Pupils become fluent in counting and recognising coins. They read and say amounts of money confidently and use the symbols £ and p.  Children handle and name a wide variety of common 2-D and 3-D shapes and identify the properties of each shape. Children identify, compare and sort shapes on the basis of their properties and read and write vocabulary precisely. Pupils draw lines and shapes using a straight edge. Children use the concept and language of angles.  Children record, interpret, collate, organise and compare information | In Year 3, children now use multiples of 2, 3, 4, 5, 8, 10, 50 and 100. They use larger numbers to at least 1000, applying partitioning related to place value using varied and increasingly complex problems. Using a variety of representations, including those related to measure, pupils continue to count in ones, tens and hundreds, so that they become fluent in the order and place value of numbers to 1000. Pupils use their understanding of place value and partitioning, and practise using column addition and subtraction with increasingly large numbers up to three digits to become fluent. Children continue to practise their mental recall of multiplication tables. Through doubling, they connect the 2, 4 and 8 multiplication tables. Children connect tenths to place value, decimal measures and to division by 10. They begin to understand unit and non-unit fractions as numbers on the number line, and deduce relations between them, such as size and equivalence. They continue to recognise fractions in the context of parts of a whole, numbers, measurements, a shape, and unit fractions as a division of a quantity. Children practise adding and subtracting fractions with the same denominator through a variety of increasingly complex problems to improve fluency. Children continue to measure using the appropriate tools and units. Children continue to become fluent in recognising the value of coins, by adding and subtracting amounts, including mixed units, and giving change using manageable amounts. They record £ and p separately. Children use both analogue and digital 12-hour clocks and record their times.  Children’s knowledge of the properties of shapes is extended at this stage to symmetrical and non-symmetrical. They should be able to describe the properties of 2-D and 3-D shapes using accurate language, including lengths of lines and acute and obtuse for angles greater or lesser than a right angle.  Children understand and use simple scales in pictograms and bar charts with increasing accuracy. They continue to interpret data presented in many contexts | In Year 4, children use a variety of representations, including measures, to become fluent in the order and place value of numbers beyond 1000, including counting in tens and hundreds, and maintaining fluency in other multiples through varied and frequent practice. They begin to extend their knowledge of the number system to include the decimal numbers and fractions that they have met so far. Roman numerals should be put in their historical context so children understand that there have been different ways to write whole numbers and that the important concepts of zero and place value were introduced over a period of time. Children continue to practise both mental methods and column addition and subtraction with increasingly large numbers to aid fluency. Children continue to practise recalling and using multiplication tables and related division facts to aid fluency. Pupils practise mental methods and extend this to three-digit numbers to derive facts. Children solve two-step problems in contexts, choosing the appropriate operation, working with increasingly harder numbers.  Children practise to become fluent in the formal written method of short multiplication and short division with exact answers.  Children should connect hundredths to tenths and place value and decimal measure. They extend the use of the number line to connect fractions, numbers and measures. Children make connections between fractions of a length, of a shape and as a representation of one whole or set of quantities. Children use factors and multiples to recognise equivalent fractions and simplify where appropriate.  Children continue to practise adding and subtracting fractions with the same denominator.  Pupils are taught throughout that decimals and fractions are different ways of expressing numbers and proportions. Children’s understanding of the number system and decimal place value is extended at this stage to tenths and then hundredths. They practise counting using simple fractions and decimals, both forwards and backwards. Pupils learn decimal notation and the language associated with it, including in the context of measurements. They make comparisons and order decimal amounts and quantities that are expressed to the same number of decimal places. They should be able to represent numbers with one or two decimal places in several ways.  Children build on their understanding of place value and decimal notation to record metric measures, including money. Children continue to classify shapes using geometrical properties, extending to classifying different triangles and quadrilaterals. Children compare and order angles in preparation for using a protractor and compare lengths and angles. Children draw symmetric patterns using a variety of media to become familiar with different orientations of lines of symmetry. They read, write and use pairs of coordinates.  Pupils begin to relate the graphical representation of data to recording change over time. | In Year 5, children identify the place value in large whole numbers. They continue to use number in context, including measurement. Pupils extend and apply their understanding of the number system to the decimal numbers and fractions that they have met so far. They should recognise and describe linear number sequences, including those involving fractions and decimals.  Children practise using the formal written methods of column addition and subtraction with increasingly large numbers to aid fluency.  Children practise and extend their use of the formal written methods of short multiplication and short division. They apply all the multiplication tables and related division facts frequently, commit them to memory and use them confidently to make larger calculations. They use and understand the terms factor, multiple and prime, square and cube numbers. Children use multiplication and division as inverses to support the introduction of ratio. Children are taught throughout that percentages, decimals and fractions are different ways of expressing proportions. They extend their knowledge of fractions to thousandths and connect to decimals and measures. Children practise adding and subtracting fractions to become fluent through a variety of increasingly complex problems. Children continue to develop their understanding of fractions as numbers, measures and operators by finding fractions of numbers and quantities.  Children use their knowledge of place value and multiplication and division to convert between standard units. Children calculate the perimeter of rectangles and related composite shapes. Children calculate the area from scale drawings using given measurements. Pupils use all four operations in problems involving time and money, including conversions. Children become accurate in drawing lines with a ruler to the nearest millimetre, and measuring with a protractor. They use conventional markings for parallel lines and right angles. Pupils use angle sum facts and other properties to make deductions about missing angles. Children recognise and use reflection and translation in a variety of diagrams, including continuing to use a 2-D grid and coordinates in the first quadrant. Children connect their work on coordinates and scales to their interpretation of time graphs. They begin to decide which representations of data are most appropriate and why. | In Year 6, children use the whole number system, including saying, reading and writing numbers accurately.  Children practise addition, subtraction, multiplication and division for larger numbers, using the formal written methods of column addition and subtraction, short and long multiplication, and short and long division. They undertake mental calculations with increasingly large numbers and more complex calculations. Children continue to use all the multiplication tables to calculate mathematical statements in order to maintain their fluency. Children round answers to a specified degree of accuracy. Children explore the order of operations using brackets. Common factors can be related to finding equivalent fractions.  Children should practise, use and understand the addition and subtraction of fractions with different denominators by identifying equivalent fractions with the same denominator. They should start with fractions where the denominator of one fraction is a multiple of the other and progress to varied and increasingly complex problems. They practise calculations with simple fractions and decimal fraction equivalents to aid fluency, including listing equivalent fractions to identify fractions with common denominators. Children can explore and make estimates about converting a simple fraction to a decimal fraction. Children learn about rounding the decimal to three decimal places. Children multiply and divide numbers with up to two decimal places by one-digit and two-digit whole numbers. Children multiply decimals by whole numbers and in practical contexts, such as measures and money. Children are introduced to the division of decimal numbers by one-digit whole number in practical contexts involving measures and money. They recognise division calculations as the inverse of multiplication. Children also develop their skills of rounding and estimating as a means of predicting and checking their answers to decimal calculations. This includes rounding answers to a specified degree of accuracy and checking the reasonableness of their answers. Children recognise proportionality in contexts when the relations between quantities are in the same ratio. Pupils link percentages or 360° to calculating angles of pie charts. Pupils should consolidate their understanding of ratio when comparing quantities, sizes and scale drawings by solving a variety of problems. Children solve problems involving unequal quantities. Children should be introduced to the use of symbols and letters to represent variables and unknowns in mathematical situations that they already understand.  Children connect conversion to a graphical representation. They know approximate conversions and are able to tell if an answer is sensible. Using a number line, children use, add and subtract positive and negative integers for measures such as temperature. They relate the area of rectangles to parallelograms and triangles, understanding and using the formulae to do this. Children are introduced to compound units for speed, such as miles per hour, and apply their knowledge in science or other subjects as appropriate.  Children draw shapes and nets accurately, using measuring tools and conventional markings and labels for lines and angles. Children describe the properties of shapes and explain how unknown angles and lengths can be derived from known measurements. Children draw and label a pair of axes in all four quadrants with equal scaling. This extends their knowledge of one quadrant to all four quadrants, including the use of negative numbers. Pupils draw and label shapes specified by coordinates in the four quadrants, predicting missing coordinates using the properties of shapes. Children connect their work on angles, fractions and percentages to the interpretation of pie charts. Pupils both encounter and draw graphs relating two variables, arising from their own enquiry and in other subjects. They should connect conversion from kilometres to miles in measurement to its graphical representation. Children know when it is appropriate to find the mean of a data set. |