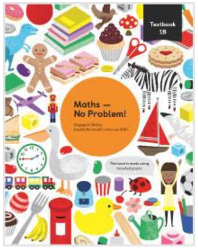
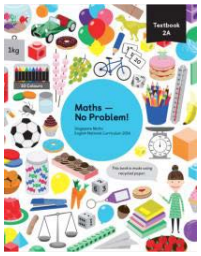
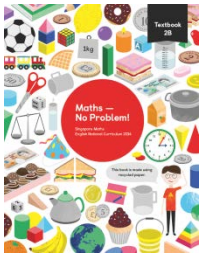
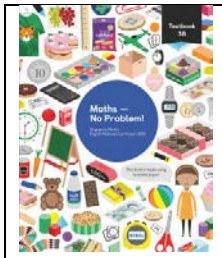
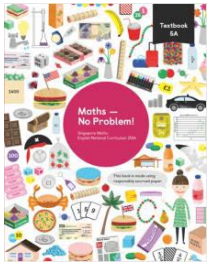
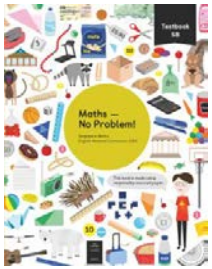
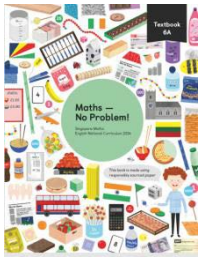
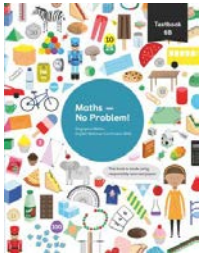
Medlock Primary School
Whole School Maths Overview

We follow the Maths No Problem scheme of work from Year 1 to, which is based on the Singapore method of teaching and learning – learning concepts through concrete apparatus, pictorial images and finally abstract representations (numbers and symbols). This is called the CPA approach. Each teacher will respond to the needs of their own class so some topics may be taught slightly earlier or later. We assess your child before and after each chapter of learning to make sure that your child has mastered the concept before we move on. We carry out two key assessments Y3-5 – one in the Spring Term and one in the Summer Term – and these help us to assess whether your child has reached the standards expected for their year group.

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Reception	We will learn to count to 10, both forwards and backwards, and how to write the digits. We will order numbers to 10. We will be able to say one more or one less than any number up to 10 and learn to estimate the amount of objects in a small group. We will combine two small groups of objects to find a total less than 10. We will start to subtract numbers from numbers under 10. We will recognise simple repeating patterns and begin to continue them. We will begin to compare lengths, masses and capacity of everyday objects. We will explore 2D and 3D shapes in everyday life and begin to use mathematical vocabulary to describe them.		We will learn to count to 10, both forwards and backwards, and how to write the digits. We will order numbers to 10. We will be able to say one more or one less than any number up to 10 and learn to estimate the amount of objects in a small group. We will combine two small groups of objects to find a total less than 10. We will start to subtract numbers from numbers under 10. We will recognise simple repeating patterns and begin to continue them. We will begin to compare lengths, masses and capacity of everyday objects. We will explore 2D and 3D shapes in everyday life and begin to use mathematical vocabulary to describe them.		We will learn to count to 10, both forwards and backwards, and how to write the digits. We will order numbers to 10. We will be able to say one more or one less than any number up to 10 and learn to estimate the amount of objects in a small group. We will combine two small groups of objects to find a total less than 10. We will start to subtract numbers from numbers under 10. We will recognise simple repeating patterns and begin to continue them. We will begin to compare lengths, masses and capacity of everyday objects. We will explore 2D and 3D shapes in everyday life and begin to use mathematical vocabulary to describe them.	
Year 1   	**Numbers to 100** We will learn to count to 100, including counting up in 10s. We will compare numbers using what we know about place value knowledge. We will embed our number bonds and apply them. We will explore numbers to see patterns within 100. **Addition and Subtraction** We will learn to add and subtract mentally by applying our number bonds diagrams as well as using the standard column method. **Multiplication of 2, 5 and 10** We will be using concrete apparatus and images to investigate multiplication by 2, 5 and 10. We will learn to look for patterns in multiplication and we will understand the commutative law.	**Multiplication and Division of 2, 5 and 10** We will learn about both the multiplication and division of 2, 5 and 10. We will look at different ways of sharing, including sharing and grouping before learning about division by 2, 5 and 10. We will also investigate links between multiplication and division and odd and even numbers. **Length** We will deepen our understanding of how to measure length. We will begin by understanding what a metre is and what centimetres are and then progress to using them in real-life contexts. **Mass** We will be learning about mass in the context of kilograms and grams. We will learn how to read scales, to compare the weight of different objects and to solve word problems in the context of mass.	**Temperature** We will learn to measure temperature. We will learn about celsius, how to read thermometers and we will look at what kinds of temperatures we can measure. **Picture Graphs** We will learn how to read, interpret, analyse and construct our own picture graphs with confidence. **More Word Problems** We will be learning to use addition and subtraction to help solve word problems. We will learn to make the decision to use addition and subtraction. We will use the bar models to think about what is the same and what is the difference. **Money** We will learn to write and count money and we will learn to represent money using £ and p. We will be reinforcing previous counting methods using 5s and 10s to count quickly and efficiently. We will learn to show equal amounts of money and to exchange money. We will solve problems involving money using bar modelling.	**Two Dimensional Shapes** We will be learning about 2-D shapes and their different properties. We will explore how to draw shapes, make patterns with shapes and turn shapes using familiar language. We will be identifying sides of shapes and their vertices before moving on to lines of symmetry. We will recreate shapes using blocks and sorting the basic shapes before we learn to draw shapes using square grids and dot grids. **Three Dimensional Shapes** Following on from our learning about 2D shapes, we will be learning to recognise, describe and group 3-D shapes, forming structures with them and making patterns using 3-D shapes.	**SATs** We will take two standardised assessment tasks (SAT) – one arithmetic paper and one reasoning paper. **Fractions** We will embed our understanding that fractions are equal parts and will focus on halves, quarters and thirds. We will learn to name fractions of the same denominations. We will understand how many quarters, halves and thirds make a whole. We will explore how to order and compare fractions. We will count in fractions and begin to learn how to find fractions of a set of objects or part of a quantity.	**Time** We will learn to tell the time to the nearest 5 minutes on analogue clocks. We will learn how to find the duration of time, the end of a length of time, the beginning of a length of time and, finally, compare lengths of time. **Volume** We will learn to compare volumes of containers, measuring in l and ml and solving word problems associated with volume. **NB:** In order to ensure your child is adequately prepared for the Assessment Tasks (SAT) undertaken in May, the class teacher may teach parts of some chapters at an earlier date.

Year 2   	**Numbers to 100** We will learn to count to 100, including counting up in 10s. We will compare numbers using what we know about place value knowledge. We will embed our number bonds and apply them. We will explore numbers to see patterns within 100. **Addition and Subtraction** We will learn to add and subtract mentally by applying our number bonds diagrams as well as using the standard column method. **Multiplication of 2, 5 and 10** We will be using concrete apparatus and images to investigate multiplication by 2, 5 and 10. We will learn to look for patterns in multiplication and we will understand the commutative law.	**Multiplication and Division of 2, 5 and 10** We will learn about both the multiplication and division of 2, 5 and 10. We will look at different ways of sharing, including sharing and grouping before learning about division by 2, 5 and 10. We will also investigate links between multiplication and division and odd and even numbers. **Length** We will deepen our understanding of how to measure length. We will begin by understanding what a metre is and what centimetres are and then progress to using them in real-life contexts. **Mass** We will be learning about mass in the context of kilograms and grams. We will learn how to read scales, to compare the weight of different objects and to solve word problems in the context of mass.	**Temperature** We will learn to measure temperature. We will learn about Celsius, how to read thermometers and we will look at what kinds of temperatures we can measure. **Picture Graphs** We will learn how to read, interpret, analyse and construct our own picture graphs with confidence. **More Word Problems** We will be learning to use addition and subtraction to help solve word problems. We will learn to make the decision to use addition and subtraction. We will use the bar models to think about what is the same and what is the difference. **Money** We will learn to write and count money and we will learn to represent money using £ and p. We will be reinforcing previous counting methods using 5s and 10s to count quickly and efficiently. We will learn to show equal amounts of money and to exchange money. We will solve problems involving money using bar modelling.	**Two Dimensional Shapes** We will be learning about 2-D shapes and their different properties. We will explore how to draw shapes, make patterns with shapes and turn shapes using familiar language. We will be identifying sides of shapes and their vertices before moving on to lines of symmetry. We will recreate shapes using blocks and sorting the basic shapes before we learn to draw shapes using square grids and dot grids. **Three Dimensional Shapes** Following on from our learning about 2D shapes, we will be learning to recognise, describe and group 3-D shapes, forming structures with them and making patterns using 3-D shapes.	**SATs** We will take two standardised assessment tasks (SAT) – one arithmetic paper and one reasoning paper. **Fractions** We will embed our understanding that fractions are equal parts and will focus on halves, quarters and thirds. We will learn to name fractions of the same denominations. We will understand how many quarters, halves and thirds make a whole. We will explore how to order and compare fractions. We will count in fractions and begin to learn how to find fractions of a set of objects or part of a quantity.	**Time** We will learn to tell the time to the nearest 5 minutes on analogue clocks. We will learn how to find the duration of time, the end of a length of time, the beginning of a length of time and, finally, compare lengths of time. **Volume** We will learn to compare volumes of containers, measuring in l and ml and solving word problems associated with volume. **NB:** In order to ensure your child is adequately prepared for the Assessment Tasks (SAT) undertaken in May, the class teacher may teach parts of some chapters at an earlier date.
Year 3  	**Numbers to 1000** We will learn numbers to 1000 and focus on the value of each digit: place value. We will learn how to compose and decompose numbers, compare, order and look for patterns. Addition and Subtraction We will learn to use formal methods of addition and subtraction where regrouping is required. We will learn to solve problems using addition and subtraction, using the bar model as a visual aid.	**Multiplication and Division** We will learn to multiply and divide by 3, 4 and 8. We will then use this experience of multiplication and division to solve word problems. **Further Multiplication and Division** We will learn to multiply and divide using both informal and formal methods. We will solve problems such as missing number	**Length** We will embed our understanding of measuring length in metres and centimetres before moving on to kilometres. We will learn to convert different units of measurement as well as compare different lengths. We will solve in which we will use our mental and procedural skills to solve problems with the aid of the bar model.	**Money** We will embed our previous learning on recognising different denominations (both notes and coins) and the simple addition and subtraction of money. We will then develop the concepts related to addition and subtraction of money using number bonds as a key method. We will then apply our new knowledge to solve word problems using bar modelling as a key strategy.	**Picture Graphs and Bar Graphs** We will be learning about how to create and interpret picture graphs and bar graphs. We will create picture graphs where the pictures can represent more than 1 item. Then, we will start to create bar graphs. We will then read and interpret information from bar graphs. **Fractions** We will begin by counting using fractions and then making number pairs (the	**Lines and Shapes** We will be exploring different types of lines in addition to properties of shapes, both 2- and 3-D. We will learn to identify perpendicular and parallel lines, followed by horizontal and vertical lines. We will learn the vocabulary to describe 2-dimensional shapes and learn to draw them before making 3-dimensional shapes using nets and clay. **Perimeter of Figures** We will learn to measure

		problems and scaling problems.	**Mass** We will be using scales to measure mass in g and kg, reading scales that have different values for each marking. We will then solve some challenging word problems using the bar model. **Volume** We will learn to measure volume using millilitres and litres. We will solve a range of problems involving volume and capacity.	**Time** We will tell the time using 'am' and 'pm', telling the time to the minute, using analogue and digital time and telling time by using both the minute and hour hands We will then learn to use the 24-hour clock and clocks using roman numerals. We will understand how to measure and compare time in seconds, hours and minutes. We will convert units of time and then find a number of days in lengths of time.	fraction equivalent to number bonds) before moving on to adding and subtracting fractions. We will explore equivalent fractions and look at simplifying fractions before comparing fractions with different denominators. We will be finding fractions of whole numbers as part of set and looking at sharing 1 and more than 1. We will apply our learning to solve increasingly sophisticated word problems.	the total length around a shape to find its perimeter before moving onto grid paper to measure the combined lengths of each side. We will learn to calculate perimeter by adding all of the lengths together. We will learn to solve problems using perimeter.
Year 5  	**Numbers to 1 000 000** We will be looking at numbers and their place value to 1 000 000. We will learn to read and write numbers to 100 000, quickly moving onto numbers to 1 000 000. We will use concrete materials to represent numbers to 1 000 000, including number discs and place-value charts. We will learn to compare numbers to 1 000 000 using our knowledge of place value. We will explore number patterns and learn to round numbers to the nearest 10, 1000, 10 000 and 100 000. **Whole Numbers: Addition and Subtraction** We will be exploring addition and subtraction of numbers to 1 000 000. We will learn to use simple strategies to add and subtract, such as counting on and counting back. We will then focus on adding within 1 000 000 and subtracting within 1 000 000. We will learn to use a range of methods, such as the column method and number bonds to add and	**Whole Numbers: Multiplication and Division** We will be learning to multiply and divide 3- and 4-digit numbers by single- and double-digit numbers. We will be finding and defining multiples, factors and common factors. We will begin to work with prime numbers and determine what makes a number prime or composite. We will then learn about square and cube numbers before moving on to multiplying and dividing by 10, 100 and 1000. We will be using a variety of methods, including: number bonds, column methods and the grid method. **Whole Numbers: Word Problems** We will be challenging ourselves to apply our learning of all four operation to solve multiple step word problems. We will be using the bar model and other visual representations to help visualise word problems.	**Graphs** We will be learning to read and interpret information in tables and in line graphs. We will be deepening our understanding of time as we read increasingly complex timetables. We will be comparing line graphs and bar graphs. **Fractions** We will be learning to use more diverse problems involving fractions, including dividing and multiplying fractions by whole numbers. We will be supporting our learning with concrete apparatus and diagrams to help visualise fractions. We will learn to add and subtract fractions with different denominators and fractions represented with mixed numbers and improper fractions. We will begin to multiply fractions by whole numbers and multiply mixed numbers by whole numbers. We will solve problems involving fractions using the bar model.	**Decimals** We will be learning to read and write decimals to thousandths, using concrete apparatus to support our learning. We will order decimals using our understanding of place value. We will explore the link between hundredths and thousandths written as fractions and decimals. We will apply our understanding of addition and subtraction to add and subtract decimals. **Percentage** We will learn to link hundredths to other equivalent fractions. We will then understand how other fractions can be shown as 'out of 100' and write this as both a decimal and percentage. We will then calculate percentages.	**Geometry** We will be learning how to measure angles in degrees using a protractor. We will explore the angles that make 180° or straight line and those that make a full turn. We will practice drawing lines and angles accurately and use this to create accurate drawings of 2D shapes. We will apply our understanding of angles to solve problems involving angles. We will learn what a polygon is be able to name regular polygons. **Position and Movement** We will be embedding our understanding of writing co-ordinates of points. We will understand how to translate and reflect shapes on a grid. We will be able to solve problems involving translations and reflections of shapes. **Measurement** We will embed our understanding of how to convert between different units of length, mass and time. We will learn to use negative numbers when reading scales, such as	**Area and Perimeter** We will embed our understanding of how to calculate area and perimeter of shapes. We will be learning how to use scale diagrams to find the area and perimeter of figures. We will understand how to estimate area and when this might be useful. **Volume** We will be learning how to find the volume of solid shapes. We will explore how we can find the compare the capacity of cuboids. We will understand how to convert between units of measurement for volume, estimate volume and solve word problems involving volume. **Roman Numerals** We will be learning to read and write Roman numerals up to 1000 and writing years in this way.

	subtract numbers. We will use concrete materials to improve our visualisation and mental skills.				thermometers. We will solve problems involving measurements.	
Year 6   	**Numbers to 10 million** We will refine our knowledge of place value, working with numbers between 1 000 000 and 10 000 000. We will use concrete apparatus, numerals and words to represent numbers. We will round and compare numbers to 10 000 000, and place them in order from smallest to greatest. **Four Operations on Whole Numbers** We will learn to create and solve expressions involving brackets, exponents, multiplication, division, addition and subtraction. We will then be multiplying 3- and 4-digitnumbers by 2-digit numbers using number bonds and column multiplication as the key methods. After this, they we will learn to estimate the products of multiplication sentences before moving onto division. We will be learning to divide 3- and 4-digit numbers by 2-digit numbers using a variety of methods, including number bonds and long division. We will strategies to solve more complex word problems involving multiple operations, including multiplication and division, using the bar and other pictorial methods. We will deepen our understanding of common multiples, common factors and prime numbers.	**Fractions** We will refine our understanding of simplifying fractions using concrete apparatus and use this understanding to order fractions from the smallest to largest. We will learn to add and subtract fractions with different denominators, using pictures and diagrams to support our learning. We will extend our understanding to add and subtract mixed numbers. We will learn to use pictorial and abstract methods to multiply and learn how to divide fractions by a whole number. **Decimals** We will deepen our understanding of reading and writing decimals using base ten materials before moving on to dividing and multiplying decimals by 1-digit numbers with no regrouping or renaming. We will learn how to write fractions as decimals using division and pictorial methods before moving on to multiplying decimal fractions. We will learn to divide decimals by 1 and 2 digit numbers using a variety of methods, including: number bonds, the worded method, long division and the column method.	**Measurements** We will learn to convert units of measure using fractions and decimals. We will apply our knowledge to length, mass, volume and time. **World Problems** We will be learning to solve increasingly complex word problems using the 4 operations and bar model diagrams. We will be learning to use high-order reasoning skills to solve problems and we will also be creating and solving our own word problems. **Percentage** We will be exploring how to calculate percentage of numbers and quantities. We will learn how to solve for percentage change and use percentage to compare amounts. We will learn how to find the percentage of a quantity, measured in amounts such as litres and millilitres. We will learn how to use percentage to compare numbers and amounts.	**Ratio** We will be learning to compare quantities and use fractions to represent this. We will learn to use the language of ratio: 'for every..'. We will then solve problems using ratio. **Algebra** We will be learning how to understand pattern using concrete apparatus and we will learn how to tabulate to help identify patterns. We will begin to understand how we can express the relationships between two numbers using a symbol or a letter. We will learn how to write algebraic expressions for each of the four operations. We will learn how to write and use formulae. Area and Perimeter We will be exploring how to calculate the area of rectangles, triangles and parallelograms.	**SATs** We will take three Standardised Assessment Tasks in Mathematics: an arithmetic paper and two reasoning papers **Volume** We will be developing our understanding of volume as it relates to cubes and cuboids. We will use concrete materials to understand the meaning of volume thoroughly. We will then determine a formula for the volume of cubes and cuboids, estimating volumes and calculating total volumes with a formula. We will solve problems related to volume, using division and multiplication. Geometry We will explore angles and discover rules for opposite angles and adjacent angles. We will explore angles in quadrilaterals and triangles. We will learn to name the parts of a circle and investigate angles within a circle. We will practise precision drawing of quadrilaterals and triangles. We will explore the nets of three dimensional shapes and learn to draw them accurately.	**Position and Movement** We will be learning how to describe positions of shapes on a grid in all four quadrants. We will learn to describe translations and reflections in all four quadrants. We will learn how we can use algebraic expressions to describe a position or a movement of a shape. **Graphs and Averages** We will be deepening our understanding of the mean as an average and solve problems using the mean. We will learn how to read pie charts and line graphs with more complex scales. We will solve problems involving graphs and pie charts. Negative Numbers We will consolidate our understanding of negative numbers by learning how to add and subtract using them. We will learn to use negative numbers in context. NB In Year 6 some learning may be covered at an earlier date in order to adequately prepare children for their SAT.