Subject Knowledge Plan – Maths



This plan details the knowledge to be acquired over the key stages. Reception children will access information, experiences and make links through their continuous provision. Year 1 children will focus on acquiring basic skills and knowledge. Year 2 children will continue with progression of basic skills and be supported to recall knowledge and make conceptual links.



EYFS – Curriculum Objectives (ELG) Communication & Language – Speaking (Mathematical Vocabulary) Participate in small group, class and one-to-one discussions, offering their own ideas, using recently introduced vocabulary.

Mathematics – Numerical Patterns (Number & Place Value - Counting) Verbally count beyond 20, recognising the pattern of the counting system.

Mathematics – Number (Identifying, Representing & Estimating Numbers) Subitise (recognising quantities without counting) up to 5.

Mathematics – Numerical Patterns (Compare & Order Numbers)

Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as another quantity.

Mathematics – Number (Understanding Place Value)

Have a deep understanding of numbers to 10, including the composition of each number.

Mathematics – Number (Addition & Subtraction – Mental Calculations)

Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts.

Mathematics – Numerical Patterns (Addition & Subtraction – Solve Problems)

Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed evenly.

National Curriculum Objectives:					
Curriculum Area	Year 1	Year 2			
Counting	Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number Count, read and write numbers to 100 in numerals; count in multiples of twos, fives and tens	Count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward			
Place Value		Recognise the place value of each digit in a two-digit number Compare and order numbers from 0 up to 100; use <, > and = signs			
Representing Number	Identify and represent numbers using objects and pictorial representations including the number line Use language of: equal to, more than, less than (fewer), most, least Read and write numbers from 1 to 20 in numerals and words Read, write and interpret mathematical statements involving addition (+), subtraction (–) and equals (=) signs	Identify, represent and estimate numbers using different representations, including the number line Read and write numbers to at least 100 in numerals and in words			
Number Facts +/-	Given a number, identify one more and one less 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 problems such as $7 = \Box$ -9 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	Use place value and number facts to solve problems Recall and use addition and subtraction facts to 20 fluently Derive and use related facts up to 100 Add and subtract numbers using concrete objects, pictorial representations, and mentally, including: TU+U, TU+T, TU+TU and U+U+U Show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot Solve problems with addition and subtraction, using concrete, pictorial and abstract representations Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems 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			

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	Recognise, find, name and write fractions 1/3, 1/4, 2/4 and 3/4 of a length, shape, set of objects or quantity Write simple fractions for example, 1/2 of 6 = 3 and recognise the equivalence of 2/4 and 1/2
Measures	Compare, describe and solve practical problems for: length/height, weight/mass, capacity/volume & time Measure and begin to record length/height, weight/mass, capacity/volume & time	Choose and use appropriate standard units to estimate and measure length/height (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 =
Money	Recognise and know the value of different denominations of coins and notes	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
Time	Sequence events in chronological order using language recognise and use language relating to dates, including days of the week, weeks, months and years Tell the time to the hour and half past the hour and draw the hands on a clock face to show these times	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
Shape	Recognise and name common 2-D shapes (e.g. Square, circle, triangle) Recognise and name common 3-D shapes (e.g. Cubes, cuboids, pyramids & spheres)	Identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line Compare and sort common 2-D and 3-D shapes and everyday objects – vertices, faces, edges 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 Compare and sort common 2-D and 3-D shapes and everyday objects
Position & Direction	Describe position, direction and movement, including whole, half, quarter and three-quarter turns	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 ¾ turns
Data		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

Intention:

- Children will 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.
- Children will reason mathematically by following a line of enquiry using mathematical vocabulary
- Children will solve problems by applying their mathematics to a variety of routine and non-routine problems

Implementation:

Maths will be taught following the White Rose Maths scheme of work for EYFS and KS1.

Children study maths daily covering a broad and balanced maths curriculum including elements of number, calculation, geometry, measures and statistics. We focus not only on the mathematical methods but also focus on maths vocabulary to deepen mathematical understanding.

We aim for each child to be confident in each yearly objective and develop their ability to use this knowledge to develop a deeper understanding to solve varied fluency problems as well as problem solving and reasoning activities.

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, spaces, and measure.

Impact:

Throughout each lesson formative assessment takes place and feedback is given to the children through marking and next step tasks to ensure they are meeting the specific learning objective. Teacher's then use this assessment to influence their planning and ensure they are providing a mathematics curriculum that will allow each child to progress. The teaching of maths is also monitored on a termly basis through book scrutinies, learning walks and lesson observations. Each term children from Year 2 and above complete a summative assessment to help them to develop their testing approach and demonstrate their understanding of the topics covered.

Coverage Plan 2023-2024						
	Autumn Term	Spring Term	Summer Term (ELG)			
Reception Number & Numerical Patterns	I can count up to 3 or 4 objects by saying one number name for each item. I can count objects to 10 and begin to count beyond 10. I can count out up to 6 objects from a larger group. I can select the correct numeral to represent 1-5 then 1-10 objects. I can recognise numerals of personal significance. I can count objects actions and sounds.	 I can begin to use 'teens' to count beyond 10. I can count an irregular arrangement of up to 10 objects. I can find one more or one less from a group of up to 5 then 10 objects. I can select the correct numeral to represent 1-20 objects. I can estimate how many objects I can see and check by counting them. I can use the language of 'more' and 'fewer' to compare two sets of objects. I fully understand 5,6,7etc. and all the manipulations of the number. I can subitise. I can link the numeral with its cardinal value. I can count beyond 10. I can compare numbers. I can find the total number of items in two groups by counting all of them and starting to use 'counting on'. I can begin to use the vocabulary involved in adding and subtracting including counting on and back. I can show some understanding of doubling and halving in familiar contexts. 	I have a deep understanding of numbers to 10, including the composition of each number. I can subitise (recognise quantities without counting) up to 5. I can automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts. I can verbally count beyond 20, recognising the pattern of the counting system. I can compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as another quantity. I can explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally. I can explore the composition of numbers to 10. I can automatically recall number bonds for numbers 0-10. I can understand the 'one more than/one less than' relationship between consecutive numbers.			
Shape, Space & Measure No ELG but is taught in KS1 so needs to be addressed	I can talk about the routine of the day and use language like before and after. I can use comparative language like taller, shorter, the same. I can start to identify shapes in the environment. I can start to find appropriate shapes for certain tasks. I can start to make more meaningful pictures, patterns and arrangements with shapes. I can continue, copy and create repeating patterns.	 I can experiment with length, height and capacity and use my findings to order and group items. I can identify money and start to use money in my play. I can recall routines and start to relate them to time on the clock. I can compare by length, weight and capacity. I can ask questions about my observations of differences and similarities. I can recall the names for 2D and 3D shapes and I can use some of the terms to describe their properties. I can order and sort according to simple properties. I can compose and decompose shapes so that I can recognise that a shape can have other shapes within it just like numbers can. I can use the language of direction when programming toys. I can select, rotate and manipulate shapes in order to develop spatial reasoning skills. 				

Year 1	Number: Place Value within 10 New Content - Count objects from a larger group Number: Addition & Subtraction within 10 New content - Add and subtract 1 or 2 Geometry: Shape	Number: Place Value within 20 Steps have been broken down further to allow greater exploration of the difficult 'teen' numbers. Number: Addition & Subtraction within 20 Use of doubles and near doubles has been made explicit. The concept of the difference between two numbers is introduced for the first time. Number: Place Value within 50 Groups of 10 have been given more prominence to support the idea of partitioning. Measurement: Length & Height Measurement: Mass & Volume New Content - Full and empty	Number: Multiplication & Division Number: Fractions Geometry: Position & Direction Number: Place Value within 100 Greater exploration of multiples of 10 New Content - An extra step has been added on the use of the number line. Measurement: Money New Content - An extra step has been added to introduce the idea of unitising before looking at the values of coins. Measurement: Time Extra steps have been added to explore the names of the days of the week and units of time.
Year 2	Number: Place Value Consolidation of Year 1 material on the numbers to 100 is more explicit, and broken down into a greater number of steps. Number: Addition & Subtraction New Content - Adding by making 10 (moved from Y1) Geometry: Shape More of a focus on line symmetry – broken down into smaller steps - Add equal groups - Make arrays	Measurement: Money Early calculations with money have been simplified and will involve pounds only or pence only. Number: Multiplication & Division Steps relating to each of the key times-tables for Year 2 have been grouped together to support development of understanding and fluency of factual knowledge. New Content - A new step has been added to emphasise the connection between the 5 and 10 times tables. Measurement: Length & Height Measurement: Mass, Capacity & Temperature Extra steps have been added so children can practise their skills using the four operations of arithmetic in the contexts of mass, capacity and temperature.	Number: FractionsNew Content- Extra steps have been added to help pupils to see thelinks between fractions and the whole.Measurement: TimeNew Content- Extra steps have been added to provide greaterfocus, breaking down the development of telling thetime to nearest 5 minutes Extra step focusing on the fact that 1 hour is equal to60 minutes.StatisticsNew Content- An extra step has been added so children learn howto read information presented in tables.Geometry: Position & DirectionNew Content- An extra step has been added to revisit the languageof position covered in Year 1 before moving on to usethis language within movement and turns.