Years 3 & 4 Programme of Study

Mathematics is the art of explaining: a creative and highly-interconnected discipline providing the solution to some of history's most intriguing problems. We seek to provide a foundation for understanding the world, the ability to reason mathematically, an appreciation of the power and beauty of mathematics, and a sense of curiosity and enjoyment of the subject.

We follow a mastery curriculum and each unit encompasses previously learnt knowledge to highlight the relational nature of mathematics.

In years 3 and 4, pupils will

- become increasingly fluent with whole numbers and the four operations, including number facts and place value;
- develop efficient methods of mental and written calculation;
- develop their ability to solve problems, including with simple fractions and decimals;
- draw shapes with increasing accuracy so they analyse their geometric properties and describe relationships between them;
- use measuring instruments with accuracy;
- by the end of year 4, know their multiplication tables up to 12 x 12 by heart and the associated division facts.

YEAR 3

Autumn Term	Spring Term	Summer Term
Numbers to 1,000: • Know how to count in hundreds, fifties, tens, eights, fours and ones. • Be able to read, write, compare and order numbers to 1000. • Understand our place value system uses base-10 and that the position of a digit in a number determines its value.	**Measurement Mass:** • Know how to read scales showing grams and kilograms. • Be able to weigh and record masses accurately. • Understand that the smaller the unit, the greater the number of units needed to measure.	**Fractions:** • Know how to find a fraction of a set or number and identify / find equivalent fractions. • Be able to find the simplest fraction; compare, add and subtract fractions; sharing one or more than one when it cannot be exactly divided. Use a number line to think about fractions. • Understand that fractions are a relationship between parts and a whole and that those parts are all equal.
Addition and Subtraction: • Know addition and subtraction facts within 20 and 100. • Be able to add and subtract numbers to 1000 using informal and formal methods. • Understand numbers can be partitioned and recombined in different ways to make calculations easier.	**Measurement Volume:** • Know how to read scales in millilitres and litres. • Be able to measure volume and capacity in millilitres and litres. • Understand that the smaller the unit, the greater the number of units needed to measure.	**Angles:** • Know that a quarter turn is called a right angle and has a measurement of 90 °. • Be able to make angles; find angles in shapes; find right angles; compare angles; make turns. • Understand that angles are about the amount of turn – the lengths of the lines used to represent angles do not affect the size of the angle.

Multiplication and Division: • Know multiplication and division facts for the 3s, 4s and 8s. • Be able to write number sentences using the facts. • Understand the multiplication and division are two sides of one relationship involving equal groups.	**Measurement Money:** • Know how to count and show amounts of money. • Be able to add and subtract with money and calculate change. • Understand that an amount of money can be shown in different ways.	**Lines and Shapes:** • Know the meaning of and identify perpendicular, parallel lines, vertical and horizontal lines. • Be able to describe 2D shapes by their sides and angles; draw 2D shapes; make and describe 3D shapes. • Understand that relationships are at the heart of properties of shapes, not particular measurements.
Further Multiplication and Division: • Know extended multiplication and division facts • Be able to multiply and divide 2-digit numbers using extended facts and formal short multiplication. • Understand numbers can be partitioned and recombined in different ways to make calculations easier.	**Measurement Time:** • Know how many seconds in a minutes, minutes in an hour, hours in a day. • Be able to tell the time on an analogue clock; measure and compare time in seconds, minutes and hours; change minutes to seconds / seconds to minutes; find the number of days in a period of time. • Understand the patterns which govern how time is read and recorded.	**Perimeter of Figures:** • Know the meaning of and identify examples of perimeter. • Be able to measuring around a shape and calculate perimeter. • Understand that different shapes can have the same perimeter and shapes with the same perimeter can be different sizes.
Measurement Length: • Know conversion facts for mm, cm, m and km. • Be able to rewrite lengths using different measures e.g. 1cm = 10mm. Be able to estimate lengths using benchmarks (10cm, 1m…) • Understand that the smaller the unit, the more units are needed to measure an object.	**Picture Graphs and Bar Graphs:** • Know that tally charts are used to collect data over time and can also be used to keep track of counting. • Be able to draw and picture graphs, tally charts and bar charts. • Understand that data needs to be collected with a question or purpose in mind.	The final part of the year is available to review topics as necessary.
	Fractions see Summer Term	

YEAR 4

Autumn Term	Spring Term	Summer Term
Numbers to 10 000: • Know the place value of digits in numbers up to 10 000. Know how to count forwards and backwards in twenty-fives and in hundreds and thousands from any number. • Be able to order and compare numbers; make number patterns; round and estimate numbers on a number line. • Understand place value in additive terms (435 = 400 + 30 + 5) and in multiplicative terms (300 is ten times bigger than 30).	**Further Multiplication and Division cont.** • Know the effect of multiplying and dividing by 1 and 0. • Be able to multiply and divide multiples of 10, 2-digit numbers and 3-digit numbers by a single digit using short multiplication. • Understand that the associative law can be used be make multiplication easier.	**Measurement: Mass, Volume and Length:** • Know the units of measure for mass, volume, height and length. • Be able to measure and convert units of mass, volume, height and length; measure perimeters in different units; read scales. • Understand that the smaller the unit of measure, the more units needed to measure.
Addition and Subtraction within 10 000	**Graphs:**	**Area of Figures:**

• Know the mathematical meaning of sum and difference. Know how to make bonds to multiples of 1000. • Be able to add and subtract with and without regrouping using a formal column method when appropriate; use informal strategies when working with 'friendly' numbers. • Understand that looking at the numbers in a calculation and their relationship to each other can make calculating easier.	• Know how to read and interpret pictograms, bar charts and line graphs. • Be able to construct pictograms, bar charts and line graphs. • Understand that the axes of a chart or graph are number lines and therefore the marks are evenly spaced.	• Know that area measures the surface covered by an object. • Be able to find the area of rectangles by using multiplication facts and of other shapes by counting squares. • Understand that shapes with different areas can have the same perimeter and shapes with the same perimeter can have the same area.
Multiplication and Division: • Know and recall fluently all the multiplication and division facts to 12 x 12. • Be able to multiply and divide by 6, 7, 9, 11, 12, including dividing with remainders. • Understand what multiplication means and see division as both grouping and sharing, and to see division as the inverse of multiplication.	**Fractions:** • Know how to count in hundredths and convert mixed numbers and improper fractions. • Add and subtract fractions. Find equivalent fractions, simplify fractions and mixed numbers. • Understand that fractions with the same value can be written in many different ways using multiples and common factors.	**Geometry:** • Know and identify different types of angles. • Be able to compare angles; classify triangles and quadrilaterals; identify, make and complete symmetrical figures; sort shapes. • Understand that all shapes have a unique set of characteristics.
Further Multiplication and Division: • Know the effect of multiplying by 0 and 1 and dividing by 1; how to use known facts to find extended facts. • Be able to multiply three numbers and multiples of 10 informally; use formal short multiplication and division with 2-digit numbers and 3-digit numbers. • Understand that the distributive law can be used to partition numbers in different ways to create equivalent calculations and looking for equivalent calculations can make calculating easier.	**Measurement: Time** • Know how to tell the time to the minute on a 12-hour and 24-hour clock. • Be able to change minutes to seconds, hours to minutes, weeks to days and years to months. • Understand	**Position & Movement:** • Know how to use a coordinate graph. • Be able to describe position and movements and plot points on the coordinate plane. • Understand the standard convention for writing coordinates.
	Decimals: • Know how to write tenths and hundredths; write, compare and order decimals; make number patterns • Be able to round decimals to the nearest whole number; write fractions as decimals; divide whole numbers by 10 and 100. • Understand that decimals represent fractions over 10, 100, 1000…	**Roman Numerals:** Writing Roman numerals to 100.
	Measurement: Money • Know the different denominations of money. • Be able to write, compare, estimate and round amounts of money.	The final part of the year is available to review topics as necessary.

	• Understand that amounts of money can be made in different ways.	