MATHS LONG TERM PLAN – YEAR 5

Autumn 1	**Number and Place Value**	**Addition and Subtraction**	**Multiplication and Division**		
	- Read, write, order and compare numbers to at least 1,000,000 and determine the value of each digit - Count forwards or backwards in steps of powers of 10 for any given number up to 1,000,000 - Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through 0 - Round any number up to 1,000,000 to the nearest 10, 100, 1,000, 10,000 and 100,000 - Solve number problems and practical problems that involve all of the above - Read Roman numerals to 1,000 (M) and recognise years written in Roman numeral	- Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction) - Add and subtract numbers mentally with increasingly large numbers - Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy - Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why	- Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers - Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers - Establish whether a number up to 100 is prime and recall prime numbers up to 19 - Multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers - Multiply and divide numbers mentally drawing upon known facts - Divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context - Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000 - Recognise and use square numbers and cube numbers, and the notation for squared (^{2}) and cubed (^{3}) - Solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes - Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign - Solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates		
Autumn 2	**Properties of Shape**	**Fractions (including Decimals and Percentages)**	**Statistics**	**Assessment**	**Position and Direction**
	- Identify 3D shapes, including cubes and other cuboids, from 2D representations - Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles - Draw given angles, and measure them in degrees (°) - Identify: angles at a point and one whole turn (total 360°); angles at a point on a straight line and half a turn (180°); other multiples of 90° - Use the properties of rectangles to deduce related facts and find missing lengths and angles	- Compare and order fractions whose denominators are all multiples of the same number - Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths - Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements greater than 1 as a mixed number [for example, 2/5 + 4/5 = 6/5 = 1 1/5]	- Solve comparison, sum and difference problems using information presented in a line graph - Complete, read and interpret information in tables, including timetables	- NTS Assessments - Investigations (Nrich, etc)	- Identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed

	- Distinguish between regular and irregular polygons based on reasoning about equal sides and angles	- Add and subtract fractions with the same denominator and denominators that are multiples of the same number - Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams - Read and write decimal numbers as fractions [for example 0.71 = 71/100] - Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents - Round decimals with two decimal places to the nearest whole number and to one decimal place - Read, write, order and compare numbers with up to three decimal places - Solve problems involving number up to three decimal places - Recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per hundred', and write percentages as a fraction with denominator 100, and as a decimal - Solve problems which require knowing percentage and decimal equivalents of 1/2, 1/4, 1/5, 2/5, 4/5, and those fractions with a denominator of a multiple of 10 or 25			
Spring 1	**Addition and Subtraction**	**Measurement**	**Multiplication and Division**		
	- Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction) - Add and subtract numbers mentally with increasingly large numbers - Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy - Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why	- Convert between different units of metric measure [for example, kilometres and metres; centimetres and metres; centimetres and millimetres; grams and kilograms; litres and millilitres] - Understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints - Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres - Calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm^2) and square metres (m^2) and estimate the area of irregular shapes - Estimate volume [for example using 1cm^3 blocks to build cuboids (including cubes)] and capacity [for example using water]	- Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers - Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers - Establish whether a number up to 100 is prime and recall prime numbers up to 19 - Multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers - Multiply and divide numbers mentally drawing upon known facts - Divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context - Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000	

		- Solve problems involving converting between units of time - Use all four operations to solve problems involving measure [for example length, mass, volume, money] using decimal notation, including scaling		- Recognise and use square numbers and cube numbers, and the notation for squared (^{2}) and cubed (^{3}) - Solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes - Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign - Solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates	
Spring 2	**Number and Place Value**	**Fractions (including Decimals and Percentages)**	**Properties of Shape**	**Assessment**	**Statistics**
	- Read, write, order and compare numbers to at least 1,000,000 and determine the value of each digit - Count forwards or backwards in steps of powers of 10 for any given number up to 1,000,000 - Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through 0 - Round any number up to 1,000,000 to the nearest 10, 100, 1,000, 10,000 and 100,000 - Solve number problems and practical problems that involve all of the above - Read Roman numerals to 1,000 (M) and recognise years written in Roman numeral	- Compare and order fractions whose denominators are all multiples of the same number - Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths - Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements greater than 1 as a mixed number [for example, 2/5 + 4/5 = 6/5 = 1 1/5] - Add and subtract fractions with the same denominator and denominators that are multiples of the same number - Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams - Read and write decimal numbers as fractions [for example 0.71 = 71/100] - Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents - Round decimals with two decimal places to the nearest whole number and to one decimal place - Read, write, order and compare numbers with up to three decimal places - Solve problems involving number up to three decimal places - Recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per hundred', and write percentages as a fraction with denominator 100, and as a decimal - Solve problems which require knowing percentage and decimal equivalents of 1/2, 1/4, 1/5, 2/5, 4/5, and those fractions with a denominator of a multiple of 10 or 25	- Identify 3D shapes, including cubes and other cuboids, from 2D representations - Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles - Draw given angles, and measure them in degrees (°) - Identify: angles at a point and one whole turn (total 360°); angles at a point on a straight line and half a turn (180°); other multiples of 90° - Use the properties of rectangles to deduce related facts and find missing lengths and angles - Distinguish between regular and irregular polygons based on reasoning about equal sides and angles	- NTS Assessments - Investigations (Nrich, etc)	- Solve comparison, sum and difference problems using information presented in a line graph - Complete, read and interpret information in tables, including timetables

Summer 1	**Addition and Subtraction**	**Multiplication and Division**		**Fractions (including Decimals and Percentages)**	
	- Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction) - Add and subtract numbers mentally with increasingly large numbers - Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy - Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why	- Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers - Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers - Establish whether a number up to 100 is prime and recall prime numbers up to 19 - Multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers - Multiply and divide numbers mentally drawing upon known facts - Divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context - Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000 - Recognise and use square numbers and cube numbers, and the notation for squared (^{2}) and cubed (^{3}) - Solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes - Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign - Solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates		- Compare and order fractions whose denominators are all multiples of the same number - Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths - Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements greater than 1 as a mixed number [for example, 2/5 + 4/5 = 6/5 = 1 1/5] - Add and subtract fractions with the same denominator and denominators that are multiples of the same number - Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams - Read and write decimal numbers as fractions [for example 0.71 = 71/100] - Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents - Round decimals with two decimal places to the nearest whole number and to one decimal place - Read, write, order and compare numbers with up to three decimal places - Solve problems involving number up to three decimal places - Recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per hundred', and write percentages as a fraction with denominator 100, and as a decimal - Solve problems which require knowing percentage and decimal equivalents of 1/2, 1/4, 1/5, 2/5, 4/5, and those fractions with a denominator of a multiple of 10 or 25	
Summer 2	**Measurement**	**Properties of Shape**	**Number and Place Value**	**Assessment**	**Position and Direction**
	- Convert between different units of metric measure [for example, kilometres and metres; centimetres and metres; centimetres and millimetres; grams and kilograms; litres and millilitres] - Understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints	- Identify 3D shapes, including cubes and other cuboids, from 2D representations - Know angles are measured in degrees: estimate and compare	- Read, write, order and compare numbers to at least 1,000,000 and determine the value of each digit - Count forwards or backwards in steps of	- NTS Assessments - Investigations (Nrich, etc)	- Identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed

	- Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres - Calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm^2) and square metres (m^2) and estimate the area of irregular shapes - Estimate volume [for example using 1cm^3 blocks to build cuboids (including cubes)] and capacity [for example using water] - Solve problems involving converting between units of time - Use all four operations to solve problems involving measure [for example length, mass, volume, money] using decimal notation, including scaling	acute, obtuse and reflex angles - Draw given angles, and measure them in degrees (°) - Identify: angles at a point and one whole turn (total 360°); angles at a point on a straight line and half a turn (180°); other multiples of 90° - Use the properties of rectangles to deduce related facts and find missing lengths and angles - Distinguish between regular and irregular polygons based on reasoning about equal sides and angles	powers of 10 for any given number up to 1,000,000 - Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through 0 - Round any number up to 1,000,000 to the nearest 10, 100, 1,000, 10,000 and 100,000 - Solve number problems and practical problems that involve all of the above - Read Roman numerals to 1,000 (M) and recognise years written in Roman numeral		