Grayswood CE Primary School Knowledge Progression Map

Subject: Maths

Intent

The National Curriculum for Mathematics aims to ensure that all pupils:

- become fluent in the fundamentals of mathematics
- are able to reason mathematically
- can solve problems by applying their mathematics to a variety of routine and non-routine problems

At Grayswood CE Primary School, these skills are embedded within Maths lessons and developed consistently over time through a well-structured scheme of learning. We are committed to ensuring that children are able to recognise the importance of Maths in the wider world and that they are able to apply their mathematical skills and knowledge confidently in a range of different contexts.

We want our children to develop a love of Maths and to become confident mathematicians who persevere and take risks, understanding that making mistakes leads to further growth and learning.

Mathematics is of central importance to our modern society. It is an essential part of everyone's daily life, critical to science, technology, finance and engineering and necessary for any employment or independent life.

	EYFS	**Key Stage 1**		**Key Stage 2**			
	Year R	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Number- Place Value							
Counting	Subitise (recognise quantities without counting) up to 5 Verbally count beyond 20, recognising the pattern of the counting system	Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number 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	Count from 0 in multiples of 4, 8, 50 and 100 Count up and down in tenths	Count in multiples of 6, 7, 9, 25 and 1000 Count backwards through zero to include negative numbers Count up and down in hundredths	Count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000 Count forwards and backwards in decimal steps	Count forwards or backwards in steps of integers, decimals or powers of 10 for any number
Place Value	Have a deep understanding of number to 10, including the	Read and write numbers to 100 in numerals	Read and write numbers to at least 100 in numerals and in words	Read and write numbers up to 1000 in numerals and in words	Read and write numbers to at least 10 000	Read and write numbers to at least 1 000 000	Read and write numbers up to 10 000 000

	composition of each number	Read and write numbers from 1 to 20 in numerals and words Begin to recognise the place value of numbers beyond 20 (tens and ones) Identify and represent numbers using objects and pictorial representations including the number line	Recognise the place value of each digit in a two-digit number (tens, ones) Partition numbers in different ways (for example, 23 = 20 + 3 and 23 = 10 + 13) Identify, represent and estimate numbers using different representations, including the number line	Read and write numbers with one decimal place Recognise the place value of each digit in a three-digit number (hundreds, tens, ones) Identify the value of each digit to one decimal place Partition numbers in different ways (for example, 146 = 100 + 40 + 6 & 146 = 130 + 16) Identify, represent and estimate numbers using different representations, including the number line	Read and write numbers with up to two decimal places Recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones) Identify the value of each digit to two decimal places Partition numbers in different ways (for example, 2.3 = 2 + 0.3 and 2.3 = 1 + 1.3) Identify, represent and estimate numbers using different representations, including the number line	Read and write numbers with up to three decimal places Determine the value of each digit in numbers to at least 1 000 000 Identify the value of each digit to three decimal places Identify, represent and estimate numbers using the number line	Determine the value of each digit in numbers up to 10 000 000 Identify the value of each digit to three decimal places Identify, represent and estimate numbers using the number line
Comparing and ordering	Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity	Use the language of: equal to, more than, less than (fewer), most, least Given a number, identify one more and one less	Compare and order numbers from 0 up to 100; use and = signs Find 1 or 10 more or less than a given number	Compare and order numbers up to 1000 Compare and order numbers with one decimal place Find 1, 10 or 100 more or less than a given number	Order and compare numbers beyond 1000 Order and compare numbers with the same number of decimal places up to two decimal places Find 0.1, 1, 10, 100 or 1000 more or less than a given number	Order and compare numbers to at least 1 000 000 Order and compare numbers with up to three decimal places Find 0.01, 0.1, 1, 10, 100, 1000 and other powers of 10 more or less than a given number	Order and compare numbers up to 10 000 000 Order and compare numbers including integers, decimals and negative numbers Find 0.001, 0.01, 0.1, 1, 10 and powers of 10 more or less than a given number
Rounding, approximation and estimation			Round numbers to at least 100 to the nearest 10 Understand the connection between the 10 multiplication table and place value	Round numbers to at least 1000 to the nearest 10 or 100	Round any number to the nearest 10, 100 or 1000 Round decimals with one decimal place to the nearest whole number	Round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000 Round decimals with two decimal places	Round any whole number to a required degree of accuracy Round decimals with three decimal places to the nearest whole

						to the nearest whole number and to one decimal place	number or one or two decimal places
Multiplying by powers of 10			Understand the connection between the 10 multiplication table and place value	Find the effect of multiplying a one- or two-digit number by 10 and 100, identify the value of the digits in the answer	Find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths	Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000	Multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places
Negative numbers					Count backwards through zero to include negative numbers (see counting)	Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers through zero	Use negative numbers in context, and calculate intervals across zero
Sequences and patterns	Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity	Recognise and create repeating patterns with numbers, objects and shapes Identify odd and even numbers linked to counting in twos from 0 and 1	Describe and extend simple sequences involving counting on or back in different steps	Describe and extend number sequences involving counting on or back in different steps	Describe and extend number sequences involving counting on or back in different steps, including sequences with multiplication and division steps	Describe and extend number sequences including those with multiplication and division steps and those where the step size is a decimal	Describe and extend number sequences including those with multiplication and division steps, inconsistent steps, alternating steps and those where the step size is a decimal
Roman numerals				Read Roman numerals from I to XII (see time)	Read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of zero and place value	Read Roman numerals to 1000 (M) and recognise years written in Roman numerals	
Solving number problems		Solve problems and practical problems involving all of the above	Use place value and number facts to solve problems	Solve number problems and practical problems involving these ideas	Solve number and practical problems that involve all of the above and with	Solve number problems and practical problems	Solve number and practical problems that involve all of the above

					increasingly large positive numbers	that involve all of the above	
Number- Addition and Subtraction							
Understanding addition and subtraction	Explore the composition of numbers to 10	Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs	Choose an appropriate strategy to solve a calculation based upon the numbers involved (recall a known fact, calculate mentally, use a jotting) Show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot Understand subtraction as take away and difference (how many more, how many less/fewer)	Choose an appropriate strategy to solve a calculation based upon the numbers involved (recall a known fact, calculate mentally, use a jotting, written method) Understand and use take away and difference for subtraction, deciding on the most efficient method for the numbers involved, irrespective of context	Choose an appropriate strategy to solve a calculation based upon the numbers involved (recall a known fact, calculate mentally, use a jotting, written method)	Choose an appropriate strategy to solve a calculation based upon the numbers involved (recall a known fact, calculate mentally, use a jotting, written method)	Choose an appropriate strategy to solve a calculation based upon the numbers involved (recall a known fact, calculate mentally, use a jotting, written method)
Addition and subtraction facts	Compare quantities up to 10 in different context 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	Represent and use number bonds and related subtraction facts within 20	Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100 Recall and use number bonds for multiples of 5 totalling 60 (to support telling time to nearest 5 minutes)	Recall and use addition and subtraction facts for 100 (multiples of 5 and 10) Derive and use addition and subtraction facts for 100 Derive and use addition and subtraction facts for multiples of 100 totalling 1000	Recall and use addition and subtraction facts for 100 Recall and use addition and subtraction facts for multiples of 100 totalling 1000 Derive and use addition and subtraction facts for 1 and 10 (with decimal numbers to one decimal place)	Recall and use addition and subtraction facts for 1 and 10 (with decimal numbers to one decimal place) Derive and use addition and subtraction facts for 1 (with decimal numbers to two decimal places)	Recall and use addition and subtraction facts for 1 (with decimal numbers to two decimal places)
Mental methods	Automatically recall number bonds for numbers 0–5 and some to 10	Add and subtract one-digit and two-digit numbers to 20, including zero (using	Select a mental strategy appropriate for the numbers	Select a mental strategy appropriate for the numbers	Select a mental strategy appropriate for the numbers	Select a mental strategy appropriate for the numbers	Select a mental strategy appropriate for the numbers

		concrete objects and pictorial representations)	involved in the calculation Add and subtract numbers using concrete objects, pictorial representations, and mentally, including: -a two-digit number and ones -a two-digit number and tens -two two-digit numbers -adding three one-digit numbers	involved in the calculation Add and subtract numbers mentally, including: a three-digit number and ones, a three-digit number and tens, a three-digit number and hundreds	involved in the calculation Add and subtract mentally combinations of two and three digit numbers and decimals to one decimal place	involved in the calculation Add and subtract numbers mentally with increasingly large numbers and decimals to two decimal places	involved in the calculation Perform mental calculations, including with mixed operations and large numbers and decimals
Written methods		*Written methods are informal at this stage – see mental methods for expectation of calculations	*Written methods are informal at this stage – see mental methods for expectation of calculations	Add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction	Add and subtract numbers with up to 4 digits and decimals with one decimal place using the formal written methods of columnar addition and subtraction where appropriate	Add and subtract whole numbers with more than 4 digits and decimals with two decimal places, including using formal written methods (columnar addition and subtraction)	Add and subtract whole numbers and decimals using formal written methods (columnar addition and subtraction)
Estimating and checking calculations			Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems	Estimate the answer to a calculation and use inverse operations to check answers	Estimate and use inverse operations to check answers to a calculation	Use rounding and inverse operations to check answers to calculations and determine, in the context of a problem, levels of accuracy	Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy
Order of operations							Use their knowledge of the order of operations to carry out calculations involving the four operations
Solving addition and		Solve one-step problems that	Solve problems with addition and	Solve problems, including missing	Solve addition and subtraction two-step	Solve addition and subtraction multi-	Solve addition and subtraction multi-

subtraction problems including those with missing numbers		involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = ? 9	subtraction including those with missing numbers: using concrete objects and pictorial representations, including those involving numbers, quantities and measures, applying their increasing knowledge of mental and written methods	number problems, using number facts, place value, and more complex addition and subtraction	problems in contexts, deciding which operations and methods to use and why Solve addition and subtraction problems involving missing numbers	step problems in contexts, deciding which operations and methods to use and why Solve addition and subtraction problems involving missing numbers	step problems in contexts, deciding which operations and methods to use and why Solve problems involving addition, subtraction, multiplication and division, including those with missing numbers
Number- Multiplication and Division							
Understanding multiplication and division			Understand multiplication as repeated addition Understand division as sharing and grouping and that a division calculation can have a remainder Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot	Choose an appropriate strategy to solve a calculation based upon the numbers involved (recall a known or related fact, calculate mentally, use a jotting, written method) Understand that division is the inverse of multiplication and vice versa Understand how multiplication and division statements can be represented using arrays Understand division as sharing and grouping and use each appropriately	Choose an appropriate strategy to solve a calculation based upon the numbers involved (recall a known or related fact, calculate mentally, use a jotting, written method) Recognise and use factor pairs and commutativity in mental calculations	Choose an appropriate strategy to solve a calculation based upon the numbers involved (recall a known or related fact, calculate mentally, use a jotting, written method) Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers	Choose an appropriate strategy to solve a calculation based upon the numbers involved (recall a known or related fact, calculate mentally, use a jotting, written method)
Multiplication and division facts		Recall and use doubles of all numbers to 10 and corresponding halves	Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables,	Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables	Recall multiplication and division facts for multiplication tables up to 12 × 12	Know and use the vocabulary of prime numbers, prime factors and composite (non-	Identify common factors, common multiples and prime numbers Use partitioning to

			including recognising odd and even numbers Derive and use doubles of simple two-digit numbers (numbers in which the ones total less than 10) Derive and use halves of simple two-digit even numbers (numbers in which the tens are even)	Derive and use doubles of all numbers to 100 and corresponding halves Derive and use doubles of all multiples of 50 to 500	Use partitioning to double or halve any number, including decimals to one decimal place	prime) numbers Establish whether a number up to 100 is prime and recall prime numbers up to 19 Recognise and use square numbers and cube numbers, and the notation for squared and cubed Use partitioning to double or halve any number, including decimals to two decimal places	double or halve any number
Mental methods			Calculate mathematical statements for multiplication (using repeated addition) and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs	Write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental methods	Use place value, known and derived facts to multiply and divide mentally, including: - multiplying by 0 and 1 - dividing by 1 - multiplying together three numbers	Multiply and divide numbers mentally drawing upon known facts Solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes	Perform mental calculations, including with mixed operations and large numbers
Written methods		*Written methods are informal at this stage – see mental methods for expectation of calculations	*Written methods are informal at this stage – see mental methods for expectation of calculations	Write and calculate mathematical statements for multiplication using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, progressing to formal written methods Write and calculate mathematical statements for	Multiply two-digit and three-digit numbers by a one-digit number using formal written layout Divide numbers up to 3 digits by a one - digit number using the formal written method of short division and interpret remainders appropriately for the context	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 Divide numbers up to 4 digits by a one - digit number using the formal written method of short division and interpret remainders	Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication Multiply one-digit numbers with up to two decimal places by whole numbers Divide numbers up to 4 digits by a two - digit number using the formal written

				division using the multiplication tables that they know, including for two - digit numbers divided by one - digit numbers, progressing to formal written methods		appropriately for the context	method of short division where appropriate, interpreting remainders according to the context Use written division methods in cases where the answer has up to two decimal places
Estimating and checking				Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy	Use estimation and inverse to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy	Use estimation and inverse to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy	Use estimation and inverse to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy
Order of operations							Use their knowledge of the order of operations to carry out calculations involving the four operations
Solving multiplication and division problems including those with missing numbers		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	Solve problems involving multiplication and division (including those with remainders), using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts	Solve problems, including missing number problems, involving multiplication and division (and interpreting remainders), including positive integer scaling problems and correspondence problems in which n objects are	Solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, division (including interpreting remainders), integer scaling problems and harder correspondence problems such as n objects are	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	Solve problems involving addition, subtraction, multiplication and division

				connected to m objects	connected to m objects	fractions and problems involving simple rates	
Number- Fractions, Decimals and Percentages							
Understanding fractions		Understand that a fraction can describe part of a whole Understand that a unit fraction represents one equal part of a whole	Understand and use the terms numerator and denominator Understand that a fraction can describe part of a set Understand that the larger the denominator is, the more pieces it is split into and therefore the smaller each part will be	Show practically or pictorially that a fraction is one whole number divided by another (for example ¾, can be interpreted as 3 ÷ 4) Understand that finding a fraction of an amount relates to division	Understand that a fraction is one whole number divided by another (for example ¾ can be interpreted as 3 ÷ 4)		
Fractions of objects, shapes and quantities		Recognise, find and name a half as one of two equal parts of an object, shape or quantity (including measure) Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity (including measure)	Recognise, find, name 1/3, ¼, 2/4 and ¾ and write fractions of a length, shape, set of objects or quantity	Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators Recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators Recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10	Recognise, find and write fractions of a discrete set of objects including those with a range of numerators and denominators Recognise that hundredths arise when dividing an object by a hundred and dividing tenths by ten	Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements Read and write decimal numbers as fractions (e.g. 0.71 = 71/100	
Counting, comparing and ordering fractions			Count on and back in steps of ½ and ¼	Count on and back in steps of ½, ¼ and 1/3 Compare and order unit fractions and fractions with the	Count on and back in steps of unit fractions Compare and order unit fractions and fractions with the	Count on and back in mixed number steps such as 1 ½ Compare and order fractions whose denominators	Compare and order fractions, including fractions >1 (including on a number line)

				same denominators (including on a number line)	same denominators (including on a number line) (continued from Yr 3)	are all multiples of the same number (including on a number line)	
Equivalence			Write simple fractions for example, ½ of 6 = 3 and recognise the equivalence of 2/4 and ½	Recognise and show, using diagrams, equivalent fractions with small denominators	Recognise and show, using diagrams, families of common equivalent fractions Recognise and write decimal equivalents of any number of tenths or hundredths Recognise and write decimal equivalents to ¼ ½ ¾	Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents	Use common factors to simplify fractions; use common multiples to express fractions in the same denomination Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts Associate a fraction with division and calculate decimal fraction equivalents
Calculating with fractions				Add and subtract fractions with the same denominator within one whole (using diagrams) (for example, 5/7 + 1/7 = 6/7)	Add and subtract fractions with the same denominator (using diagrams)	Add and subtract fractions with the same denominator and denominators that are multiples of the same number (using diagrams) Write mathematical statements >1 as a mixed number (e.g. 2/5 + 4/5 = 6/5 = 1 1/5) Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams	Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions (e.g. ¼ x ½ = 1/8) Multiply simple pairs of proper fractions, writing the answer in its simplest form (using diagrams) Divide proper fractions by whole numbers (using diagrams) 1/3 ÷ 2 = 1/6)
Percentages						Recognise the percent symbol (%) and understand that	Find simple percentages of amounts

						percent relates to 'number of parts per hundred', and write percentages as a fraction with denominator 100, and as a decimal	
Solving problems including fractions, decimals and percentages				Solve problems that involve all of the above	Solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number Solve simple measure and money problems involving fractions and decimals to two decimal places	Solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number Solve simple measure and money problems involving fractions and decimals to two decimal places Solve problems which require knowing percentage and decimal equivalents of ½, ¼ 1/5 2/5 and 4/5 and those with a denominator of a multiple of 10 or 25	Solve problems involving fractions Solve problems which require answers to be rounded to specified degrees of accuracy Solve problems involving the calculation of percentages (for example, of measures, and such as 15% of 360) and the use of percentages for comparison
Ratio and Proportion							
Ratio and proportion							Solve problems involving the relative sizes of two quantities where missing values can be found using integer multiplication and division facts Solve

							problems involving unequal sharing and grouping using knowledge of fractions and multiples Solve problems involving similar shapes where the scale factor is known or can be found
Algebra							
Algebra							Express missing number problems algebraically Use simple formulae Generate and describe linear number sequences Find pairs of numbers that satisfy an equation with two unknowns Enumerate possibilities of combinations of two variables
Measurement							
Length/ height	Compare length, weight and capacity	Measure and begin to record lengths and heights, using non-standard and then manageable standard units (m and cm) within children's range of counting competence Compare and describe lengths and heights (for example, long/short,	Choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm) to the nearest appropriate unit using rulers Compare and order lengths and record the results using >, < and =	Measure, add and subtract lengths (m/cm/mm) Compare lengths (m,cm,mm)	Estimate and calculate lengths Compare lengths	Use, read and write standard units of length to a suitable degree of accuracy Understand and use approximate equivalences between metric (mm, cm, m and Km) and common imperial units such as inches, feet and yards. Use all four	Use, read and write standard units of length using decimal notation to three decimal places

		longer/shorter, tall/short, double/half)				operations to solve problems using decimal notation	
Perimeter and area				Understand that perimeter is a measure of distance around the boundary of a shape Measure the perimeter of simple 2-D shapes	Measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres Understand that area is a measure of surface within a given boundary Find the area of rectilinear shapes by counting squares	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 (cm2) and square metres (m2) and estimate the area of irregular shapes	Recognise that shapes with the same areas can have different perimeters and vice versa Calculate the area of parallelograms and triangles Recognise when it is possible to use the formulae for area and volume of shapes
Mass		Measure and begin to record mass/weight, using non-standard and then standard units (kg and g) within children's range of counting competence Compare and describe mass/weight (for example, heavy/light, heavier than, lighter than)	Choose and use appropriate standard units to estimate and measure mass (kg/g) to the nearest appropriate unit using scales Compare and order mass and record the results using >, < and =	Measure, add and subtract mass (kg/g) Compare mass (kg/g)	Estimate and calculate mass Compare mass	Use, read and write standard units of mass to a suitable degree of accuracy Understand and use approximate equivalences between metric (grams and kilograms) and common imperial units such as pounds and ounces. Use all four operations to solve problems using decimal notation	Use, read and write standard units of mass using decimal notation to three decimal places
Capacity and volume	Compare length, weight and capacity	Measure and begin to record capacity and volume using non-standard and then standard units	Choose and use appropriate standard units to estimate and measure capacity and volume	Measure, add and subtract volume/capacity (l/ml)	Estimate and calculate volume/capacity	Estimate (and calculate) volume (for example, using 1 cm3 blocks to build cuboids (including	Use, read and write standard units of volume using decimal notation to three decimal places

		(litres and ml) within children's range of counting competence Compare and describe capacity and volume (for example, full/empty, more than, less than, half, half full, quarter)	(litres/ml) to the nearest appropriate unit using measuring vessels Compare and order volume/capacity and record the results using >, < and =	Compare volume/capacity (l/ml)	Compare volume/capacity (l/ml)	cubes)) and capacity (for example, using water) Understand the difference between liquid volume, including capacity and solid volume Understand and use approximate equivalences between metric (ml and litres) and common imperial units such as pints and gallons. Use all four operations to solve problems using decimal notation	Calculate and estimate volume of cubes and cuboids using standard units, including cubic centimetres (cm3) and cubic metres (m3) and extending to other units (for example, mm3 and km3) Compare volume of cubes and cuboids using standard units, including cubic centimetres (cm3) and cubic metres (m3) and extending to other units (for example, mm3 and km3)
Temperature			Choose and use appropriate standard units to estimate and measure temperature to the nearest degree (°C) using thermometers	Continue to estimate and measure temperature to the nearest degree (°C) using thermometers	Order temperatures including those below 0°C	Continue to order temperatures including those below 0°C	Calculate differences in temperature, including those that involve a positive and negative temperature
Conversion					Convert between different units of measure (e.g. kilometre to metre; hour to minute)	Convert between different units of metric measure (for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre)	Convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to three decimal places Convert between miles and kilometres

Time		Recognise and use language relating to dates, including days of the week, weeks, months and years Compare and describe time (for example, quicker, slower, earlier, later) Sequence events in chronological order using language (for example, before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening Measure and begin to record time (hours, minutes, seconds) 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 Know the number of minutes in an hour and the number of hours in a day 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	Record and compare time in terms of seconds, minutes and hours; use vocabulary such as o'clock, a.m./p.m., morning, afternoon, noon and midnight Know the number of seconds in a minute, and the number of days in each month, year and leap year Tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24- hour clocks Estimate and read time with increasing accuracy to the nearest minute Compare durations of events (for example to calculate the time taken by particular events or tasks)	Convert between different units of time, e.g. hour to minute Read, write and convert time between analogue and digital 12 and 24-hour clocks	Convert between units of time (seconds, minutes, hours, days, months) in a problem solving context Continue to read, write and convert time between analogue and digital 12 and 24-hour clocks	Use, read and write standard units of time
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	Continue to recognise and use symbols for pounds (£) and pence (p) and understand that the decimal point separates pounds and pence Recognise that ten 10p coins are equivalent to £1 and	Write amounts of money using decimal notation Recognise that one hundred 1p coins are equivalent to £1 and that each coin is 1/100 of £1 Estimate, compare and calculate money in pounds and pence		

			Add and subtract money of the same unit, including giving change	that each coin is 1/10 of £1 Add and subtract amounts of money to give change, using both £ and p in practical contexts			
Solving problems involving measures		Solve practical problems for: - lengths & heights - mass/weight - capacity & volume - time	Solve simple problems in a practical context involving addition and subtraction of money and measures (including time)	Solve problems involving money and measures and simple problems involving passage of time	Solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days and problems involving money and measures	Use all four operations to solve problems involving measure (for example, length, mass, volume, money) using decimal notation including scaling Solve problems involving converting between units of time	Solve problems involving the calculation and conversion of units of measure (including money and time), using decimal notation up to three decimal places where appropriate
Geometry and Shape							
Properties of shape	Compose and decompose shapes so that children recognise a shape can have other shapes within it, just as numbers can.	Recognise and name common 2- D shapes, including rectangles (including squares), circles and triangles Recognise and name common 3- D shapes, including cuboids (including cubes), pyramids and spheres	Identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line Identify 2-D shapes on the surface of 3-D shapes, (for example, a circle on a cylinder and a triangle on a pyramid) Identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces	Draw 2-D shapes and describe them Identify horizontal and vertical lines and pairs of perpendicular and parallel lines Make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them	Compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes Identify lines of symmetry in 2-D shapes presented in different orientations Complete a simple symmetric figure with respect to a specific line of symmetry Continue to identify horizontal and vertical lines and pairs of perpendicular and parallel lines	Distinguish between regular and irregular polygons based on reasoning about equal sides and angles Use the properties of rectangles to deduce related facts and find missing lengths and angles Identify 3-D shapes, including cubes and other cuboids, from 2-D representations	Compare and classify geometric shapes based on their properties and sizes Draw 2-D shapes using given dimensions and angles Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius Recognise, describe and build simple 3-D shapes, including making nets

					Compare and classify geometric shapes based on their properties and sizes		
Angles and rotation		Describe movement, including whole, half, quarter and three-quarter turns	Use mathematical vocabulary to describe movement, including rotation as a turn Understand the link between rotation and turns in terms of right angles for quarter, half and three- quarter turns (clockwise and anti-clockwise)	Recognise angles as a property of shape or a description of a turn Identify right angles, recognise that two right angles make a half-turn, three make three quarters of a turn and four a complete turn; identify whether angles are greater than or less than a right angle	Identify acute and obtuse angles and compare and order angles up to two right angles by size	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 1/2 a turn (total 180°) - other multiples of 90°	Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles Find unknown angles in any triangles, quadrilaterals, and regular polygons
Position and direction	Continue, copy and create repeating patterns Select, rotate and manipulate shapes in order to develop spatial reasoning skills	Recognise and create repeating patterns with objects and shapes Describe position and direction	Order and arrange combinations of mathematical objects in patterns and sequences Use mathematical vocabulary to describe position, movement, including movement in a straight line	Describe positions on a square grid labelled with letters and numbers	Describe positions on a 2-D grid as coordinates in the first quadrant Plot specified points and draw sides to complete a given polygon Describe movements between positions as translations of a given unit to the left/right and up/down	Describe positions on the first quadrant of a coordinate grid Plot specified points and complete shapes 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	Describe positions on the full coordinate grid (all four quadrants) Draw and translate simple shapes on the coordinate plane, and reflect them in the axes
Statistics							
Sorting and classifying		Sort objects, numbers and shapes to a given criterion and their own	Compare and sort objects, numbers and common 2-D and 3-D shapes and everyday objects	Use sorting diagrams to compare and sort objects, numbers and common 2- D and 3-D shapes and everyday objects	Use a variety of sorting diagrams to compare and classify numbers and geometric shapes, including quadrilaterals and	Complete and interpret information in a variety of sorting diagrams (including those used to sort properties of numbers and shapes)	Continue to complete and interpret information in a variety of sorting diagrams (including those used to sort

					triangles, based on their properties and sizes		properties of numbers and shapes)
Present and interpret data		Present and interpret data in block diagrams using practical equipment	Interpret and construct simple pictograms, tally charts, block diagrams and simple tables	Interpret and present data using bar charts, pictograms and tables	Interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs	Complete, read and interpret information in tables, including timetables	Interpret and construct pie charts and line graphs and use these to solve problems
Solve problems using data		Ask and answer simple questions by counting the number of objects in each category Ask and answer questions by comparing categorical data	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	Solve one-step and two-step questions (for example, 'How many more?' and 'How many fewer?') using information presented in scaled bar charts and pictograms and tables	Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs	Solve comparison, sum and difference problems using information presented in all types of graph including a line graph	Solve comparison, sum and difference problems using information presented in all types of graph
Averages						Calculate and interpret the mode, median and range	Calculate and interpret the mean as an average

IMPACT- End Points

EYFS	Key Stage 1		Key Stage 2			
Reception	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Children in Reception will have a deep understanding of number to 10, including the composition of each number. They will know and understand how to subitise (recognise quantities without counting) up to 5. They will be able to 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. Children will be able to verbally count beyond 20, recognising the pattern of the counting system. They can compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity. Children will also be able to explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally	Children in Year 1 should be able to count to thirty and identify number bonds to ten and twenty. They should be able to add and subtract two groups and write number sentences to show this. They should be able to use resources to show their reasoning. Children should be able to identify a range of simple 2D and 3D shapes and recall basic properties (e.g. corners, faces). They can divide objects into groups and draw simple arrays. They can identify coins and measure simple lengths, heights, capacities and volumes.	Children in Year 2 will be able to count to 100 and beyond. They will use place value to add and subtract a 2digit and a 2digit number beginning to show exchange and carrying. They know their 2,5 and 10 times tables. They can name and describe common 2d and 3d shapes. They can show mastery in the way that they use their written methods and understand word problems. They will be confident using bar models and part-part whole models. They understand the fractions halves quarters and thirds. They recognize and use coins. They can tell the time to the nearest 15 minutes.	Children in Year 3 have a secure understanding of place value to 3 digit numbers, are able to use the column method confidently to add and subtract 3 numbers. They will have a secure knowledge of the 3,4 and 8 times tables and will be able to use written methods for multiplication and division.	Children in Year 4 have a growing confidence with place value, using these skills within both written and mental calculations for all four operations. Children have developed a better understanding of mathematical reasoning.	Children in Year 5 are prepared for KS2 SATS through their knowledge of mathematical concepts and their ability to explain and reason their mathematical thinking using a wide range of vocabulary.	Children in Year 6 are prepared for transition to KS3 through their knowledge of mathematical concepts and their ability to explain and reason their mathematical thinking using a wide range of vocabulary.