Scotton Lingerfield Primary School Mathematics Progression

Purpose of study

Mathematics is a creative and highly interconnected discipline that has been developed over centuries, providing the solution to some of history's most intriguing problems. It is essential to everyday life, critical to science, technology and engineering, and necessary for financial literacy and most forms of employment. A high-quality mathematics education therefore provides a foundation for understanding the world, the ability to reason mathematically, an appreciation of the beauty and power of mathematics, and a sense of enjoyment and curiosity about the subject.

Aims

The national curriculum for mathematics aims to ensure that all pupils:

- 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 rapidly and accurately
- reason mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language
- can solve problems by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions

Mathematics is an interconnected subject in which pupils need to be able to move fluently between representations of mathematical ideas. The programmes of study are, by necessity, organised into apparently distinct domains, but pupils should make rich connections across mathematical ideas to develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems. They should also apply their mathematical knowledge to science and other subjects.

The expectation is that the majority of pupils will move through the programmes of study at broadly the same pace. However, decisions about when to progress should always be based on the security of pupils' understanding and their readiness to progress to the next stage. Pupils who grasp concepts rapidly should be challenged through being offered rich and sophisticated problems before any acceleration through new content. Those who are not sufficiently fluent with earlier material should consolidate their understanding, including through additional practice, before moving on.

Key:	NC and DM Objectives	Objectives covered by teaching points above it	Objectives that will need extra input to ensure it is covered	SLS Additions	NCETM Spines	(Ready to Progress)

Counting (Daily)	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	Cardinality and Counting I know how to count objects, actions, and sounds. I know how to count beyond 10. I know how to count beyond 20. I know how to count forwards and backwards up to 20.	I know how to count to and across 100, from any number, forwards and backwards. (1NPV–1)	I know how to count in multiples of 2, 3 and 5, and in 10 from any number forwards and backwards.	I know how to count in multiples of 4, 8 and 50, and 100 from any number forwards and backwards. I know how to count forwards and backwards through zero in 1s.	I know how to count in multiples of 6, 7, 9, 11, 12 and 25, and 1000 from any number forwards and backwards. I know how to count forwards and backwards through zero in a range of multiples.	I know how to count in known multiples of 10,000 from any number forwards and backwards. I know how to count forwards and backwards through zero in powers of 10.	I know how to count in known multiples and 100,000 from any number forwards and backwards. I know how to count forwards and backwards through zero in powers of 10.

S d	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6

	Vocabulary: before between compare count digit estimate fewer first second third how many? is the same as… largest greatest last less next number numbers 1 – 20 ones tens order pair pattern subitise zero add addition altogether commutative double less more sum take away total	Vocabulary: backwards equal to equivalent to forwards greater than half-way between known fact least less than many most numeral numbers 20-100 representation tens ones addend difference equals half minuend missing number near number bonds pairs repeated addition repeated subtraction subtract subtraction subtrahend	Vocabulary: calculate column consecutive continue efficient hundreds one-, two- or three digit number operation place value predict rule sequence difference facts inverse operations near double renaming	Vocabulary: approximate formal written method numbers 101-1000 place holder relationship round columnar addition/ subtraction	Vocabulary: consecutive expression integer negative numbers positive numbers thousand ten thousand hundred thousand million associative law	Vocabulary: ascending order descending order greater than or equal to less than or equal to	Vocabulary: brackets degrees of accuracy equivalent expression order of operations
	Cardinality and Counting Counting: saying number words in sequence Counting: tagging each object with one number word Counting: knowing the last number counted gives the total so far Subitising: recognising small quantities without needing to count them all	**1.1 Comparison of quantities and measures (Progression from EYFS comparison and measures)** TP1: I know how to compare items according to attributes. I know how to measure and begin to record lengths and heights. I know how to ask and answer simple questions by	**1.11 Addition and Subtraction: Bridging 10 (Progression from 1.5 and 1.6)** I know how to round numbers to the nearest 10. (2NPV–2) TP1: I know that addition of three addends can be described by an aggregation story with three parts.	**1.17 Composition and Calculation: 100 and bridging 100 (Progression from 1.13 and 1.14)** I know how to compare numbers using <, > and =. I know how to order numbers. TP1: I know that there are 10 tens in 100; there are 100 ones in 100. 100 can also	**1.22 Composition and calculation: 1000 and four-digit numbers (Progression from 1.17 and 1.18)** I know how to read and write numbers in numerals and words. I know how to read and write Roman Numerals to 100 TP1:	**1.26 Composition and calculation: multiples of 1,000 up to 1,000,000 (Progression from 1.22)** I know how to read and write numbers in numerals and words. I know how to read and write Roman Numerals to 1000 and recognise years written in Roman Numerals. TP1:	**1.30 Composition and calculation: numbers up to 10,000,000 (Progression from 1.26)** I know how to read and write numbers in numerals and words. TP1: I know that patterns seen in other powers of ten can be extended to the unit 1,000,000. TP2:

	Numeral meanings Conservation: knowing that the number does not change if things are rearranged I know how to subitise. I know how to link the number symbol with its cardinal number value. **Comparison** More than/less than Identifying groups with the same number of things Comparing numbers and reasoning Knowing one more than/one less than relationship between counting numbers I know how to understand the 'one more than/one less than' relationship between numbers. I know the 'one more than/one less than' relationships between consecutive numbers. I know how to compare numbers. **Composition** Part-whole: identifying smaller numbers within a number Inverse operations A number can be partitioned into different pairs of numbers	counting the number of objects in each category and sorting the categories by quantity. TP2: I know that when comparing two sets of objects, one set can contain more, fewer or the same amount as the other. TP3: I know how to use the symbols <, > and = to express the relative sizes of two numbers I know how to ask and answer questions about totalling and comparing categorical data. I know how to interpret simple pictograms, tally charts, block diagrams and simple tables. I know how to compare lengths and heights. I know how to describe lengths and heights (e.g., long/short, longer/shorter, tall/short, double/half] I know how to solve practical problems involving lengths and heights. I know how to describe mass/weight [e.g., heavy/light, heavier than, lighter than], capacity and volume [e.g., full/empty, more than, less than, half, half full, quarter]. I know how to compare numbers using equal to, more than and less than.	TP2: I know that addition of three addends can be described by and augmentation story with a first, then, then, now structure. TP3: I know that the order in which addends (parts) are added or grouped does not change the sum (associative and commutative laws). TP4: I know that when we are adding three numbers, we choose the most efficient order in which to add them, including identifying two addends that make ten (combining). TP5 (progression also from 1.2, 1.3 and 1.4): I know that we can add two numbers which bridge the tens boundary by using a 'make ten' strategy. I know how to compare numbers and expressions using <, > and =. I know how to compare lengths using <, > and =. I know how to order lengths. TP6: I know that we can subtract across the tens boundary by subtracting through ten or subtracting from ten. I know how to identify and represent numbers that are presented using objects, pictures, and number lines.	be composed multiplicatively from 50, 25 or 20, units that are commonly used in graphing and measures. TP2: I know that known addition facts can be used to calculate complements to 100. I know how to apply my knowledge to add and subtract lengths and heights (m/cm/mm). I know how to measure the perimeter of simple 2-D shapes. TP3: I know that known strategies for addition and subtraction across the ten's boundary can be combined with unitising to count and calculate across the hundred's boundary in multiples of ten. TP4: I know that knowledge of two-digit numbers can be extended to count and calculate across the hundred's boundary from/to any two-digit number in ones or tens. I know how to round any number to the nearest 10 I know how to identify and represent numbers that are presented using different representations. I know how to read and write numbers up to 1000 in numerals and words. (3NPV–2)	I know that ten hundreds make 1,000, which can also be decomposed into 100 tens and 1,000 ones. TP2: I know that when multiples of 100 are added or subtracted, the sum or difference is always a multiple of 100. TP3: I know that numbers over 1,000 have a structure that relates to their size. This means they can be ordered, composed, and decomposed. TP4: I know that numbers can be rounded to simplify calculations or to indicate approximate sizes. TP5: I know that calculation approaches learnt for three-digit numbers can be applied to four-digit numbers. TP6: I know that 1,000 can also be composed multiplicatively from 500s, 250s or 200s, units that are commonly used in graphing and measures I know how to identify and represent numbers that are presented using different representations. I know how to compare numbers using <, > and =. I know how to order numbers in ascending and descending order.	I know that understanding of numbers composed of hundred thousands, ten thousands and one thousands can be supported by making links to numbers composed of hundreds, tens and ones. TP2: I know that multiples of 1,000 up to 1,000,000 can be placed in the linear number system by drawing on knowledge of the place of numbers up to 1,000 in the linear number system. TP3: I know that numbers can be ordered and compared using knowledge of their composition and of their place in the linear number system. TP4: I know that calculation approaches for numbers up to 1,000 can be applied to multiples of 1,000 up to 1,000,000. TP5 (progression from 1.24): I know that numbers can be rounded to simplify calculations or to indicate approximate sizes. I know how to round decimals with 2dp to the nearest whole number and to 1dp. (5NPV–2) TP6: I know that known patterns can be used to divide 10,000 and 100,000 into two, four and five equal parts. These units are	I know that seven-digit numbers can be written, read and ordered by identifying the number of millions, the number of thousands and the number of hundreds, tens and ones. I know how to apply my knowledge of comparing numbers to compare the volume of cubes and cuboids, recording the results using >, < and =. TP3: I know that the digits in a number indicate its structure so it can be composed and decomposed. TP4: I know that knowledge of crossing thousands boundaries can be used to work to and across millions boundaries. TP5: I know that sometimes numbers are rounded as approximations to eliminate an unnecessary level of detail; rounded numbers are also used to give an estimate or average. At other times, precise readings are useful. I know how to round any decimals to a required degree of accuracy. (6NPV–2) I know how to apply my knowledge of estimating numbers to estimate the volume of cubes and cuboids. TP6: I know that fluent calculation requires the

	A number can be partitioned into more than two numbers Number bonds: knowing which pairs make a given number I know how to explore the composition of numbers to 10. I know how to explore the composition of numbers to 20. I know how to automatically recall number bonds for 0-5 and some of 10. I know how to explore the composition of numbers to 10. I know how to automatically recall number bonds for 0-5 and some of 10. **Pattern** Continuing an AB pattern Copying an AB pattern Make own AB pattern Spotting an error in an AB pattern Identifying the unit of repeat Continuing an ABC pattern Continuing a pattern which ends mid-unit Making own ABB, ABBC patterns	**1.2 Introducing 'whole' and 'parts': part-part-whole (Progression from EYFS composition)** TP1: I know that a 'whole can be represented by one object; if some of the whole object is missing, it is not the whole. TP2: I know that a whole object can be split into two or more parts. TP3: I know 'whole' can be represented by a group of discrete objects. TP4: I know a whole group of objects can be composed of two or more parts. **1.3 Composition of number: 0-5 (Progression from EYFS composition)** TP1: I know that numbers can be represented by how many objects are in a set. TP2: I know that ordinal numbers indicate a single item or event, rather than a quantity. TP3: I know that each of the numbers one to five can be partitioned in different ways. TP4: I know that each of the numbers one to five can be	I know how to read and write numbers in numerals and words (2NPV–1) I know how to recall and use addition and subtraction facts. (2AS–1) I know how to add and subtract numbers, including adding ones or tens to a two-digit number, two two-digit numbers, three one-digit numbers. (2AS–3 and 2AS–4) I know how to apply my knowledge of addition and subtraction to solve problems involving lengths and heights. **1.12 Subtraction as difference (Progression from 1.7)** TP1: I know that the difference compares the number of objects in one set with the number of objects in another set or the difference between two measures. TP2: I know that the difference is one of the structures of subtraction. TP3: I know that consecutive whole numbers have a difference of one; consecutive odd/even numbers have a difference of two. TP4:	I know how to interpret data using bar charts, pictograms and tables. I know how to solve one-step and two-step questions [e.g., 'How many more?' and 'How many fewer?'] using information presented in scaled bar charts and pictograms and tables. **1.18 Composition and Calculation: three-digit numbers (Progression from 1.9)** TP1: I know that three-digit numbers can be composed additively from hundreds, tens and ones. This structure can be used to support additive calculation. TP2: I know that each number on the 0 to 1000 number line has a unique position. TP3: I know that the smallest three-digit number is 100, and the largest three-digit number is 999; the relative size of two three-digit numbers can be determined by examining the hundreds digit, then the tens digits, and then the ones digits, as necessary. TP4: I know that three-digit multiples of ten can be expressed multiplicatively and additively, in terms of tens or hundreds.	I know how to round any number to nearest 10, 100 and 1000. I know how to use rounding to check answers to calculations. I know how to estimate the answer to a calculation. I know how to interpret discrete and continuous data using appropriate graphical methods, including bar charts and time graphs. I know how to solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs. **1.23 Composition and calculation: tenths** TP1: I know that when one is divided into ten equal parts, each part is one tenth of the whole. TP2: I know that tenths can be expressed as decimal fractions; the number written '0.1' is one tenth; one is ten times the size of 0.1. TP3: I know that we can count in tenths up to and beyond one. TP4: I know that numbers with tenths can be composed	commonly used in graphing and measures. I know how to compare numbers using <, > and =. I know how to order numbers. I know how to round any number to nearest 10,000 and 100,000. I know how to use rounding to check answers to calculations. I know how to read and interpret information in tables, including timetables I know how to solve comparison, sum and difference problems using information presented in a line graph. I know how to complete information in tables, including timetables. **1.27 Negative numbers: counting, comparing, and calculating** TP1: I know that positive and negative numbers can be used to represent change. TP2: I know that our number system includes numbers that are less than zero; these are negative numbers. Numbers greater than zero are positive numbers. TP3: I know that the negative/minus symbol (−) is placed before a numeral	flexibility to move between mental and written methods according to the specific numbers in a calculation. I know how to interpret data presented in pie charts and line graphs. I know how to use data in pie charts and line graphs to solve problems. I know how to compare numbers using <, > and =. I know how to order numbers. I know how to round any number to a required degree of accuracy. I know how to add and subtract any number using choosing the most efficient method for any given situation. I know how to use estimation to check answers to calculations. I know how to add and subtract numbers mentally including with mixed operations and large numbers. I know how to use rounding to check answers to calculations. I know how to apply my knowledge of addition, subtraction, and inverse relationships to solve missing number problems. And solve multi-step problems in context, deciding which operations and methods to use and why.

	Spotting an error in an ABB pattern Symbolising the unit structure Generalising structures to another context or mode Making a pattern which repeats around a circle Making a pattern around a border with a fixed number of spaces Pattern spotting around us	partitioned in a systematic way. TP5: I know that each of the number one to five can be partitioned into two parts; if we know one part, we can find the other. TP6: I know that the number given before is one less; the number given after is one more. TP7: I know that partitioning can be represented using a bar model. I know how to identify and represent numbers that are presented using objects, pictures, and number lines. I know how to represent and use number bonds within 20. (1AS–1) I know how to identify if a number between one and ten is closer to one or ten. (1NPV–2) **1.4 Composition of numbers 6-10 (Progression from EYFS composition)** TP1: I know that number six to nine are composed of 'five and a bit'. Ten is composed of five and five. TP2: I know that six, seven, eight and nine lie between five and ten on a number line. TP3:	I know that we can apply the structure of difference to compare data. I know how to apply my knowledge of addition and subtraction to solve problems involving lengths and heights. **1.13 Addition and subtraction: two-digit and single digit numbers (Progression from 1.8, 1.9 and 1.10)** TP1: I know that knowledge of the number line, and quantity values of numbers, can be applied to add/subtract one to/from a given two-digit number. TP2: I know that known facts for the numbers within ten can be applied to addition/subtraction of a single-digit number to/from a two-digit number. TP3: I know that knowledge of numbers which sum to ten can be applied to the addition of a single-digit number and a two-digit number that sum to a multiple of ten, or subtraction of a single-digit number from a multiple of ten. TP4: I know that known strategies for addition or subtraction bridging ten can be applied to addition or subtraction bridging a multiple of ten.	TP5: I know that known facts and strategies for addition and subtraction within and across ten, and within and across 100, can be used to support additive calculation within 1,000. TP6: I know that familiar counting sequences can be extended up to 1000 I know how to round any number to the nearest 100. I know how to identify and represent numbers that are presented using different representations. I know how to read and write numbers up to 1000 in numerals and words. **1.19 Securing mental strategies: Calculation up to 999 (Progression from 1.15)** TP1: I know that known partitioning strategies for adding two-digit numbers within 100 can be extended to the mental addition of two-digit numbers that bridge 100, and addition of three-digit numbers. TP2: I know that transforming addition calculations into equivalent calculations can support efficient mental strategies. TP3: I know that subtraction calculations can be solved using a 'finding the difference' strategy; this	additively and multiplicatively. TP5: I know that known facts and strategies, including column algorithms, can be applied to calculations for numbers with tenths. TP6: I know that numbers with tenths can be rounded to the nearest whole number by examining the value of the tenths digit. I know how to round decimals with 1dp to the nearest whole number. (4NPV–2) I know how to add and subtract numbers with up to 4-digits, using compact column method. I know how to apply my knowledge of addition, subtraction and inverse relationships to solve missing number problems. **1.24 Composition and calculation: hundredths and thousandths** TP1: I know that when one is divided into 100 equal parts, each part is one hundredth of the whole. When one tenth of a whole is divided into ten equal parts, each part is one hundredth of the whole. TP2: I know that hundredths can be expressed as decimal fractions; the number written '0.01' is one hundredth; one is one	to indicate that the value is a negative number. TP4: I know that negative numbers can be shown on horizontal scales; numbers to the left of zero are negative (less than zero) and numbers to the right of zero are positive (greater than zero). The larger the value of the numeral after the negative/minus symbol, the further the number is from zero. TP5: I know that knowledge of the positions of positive and negative numbers in the number system can be used to calculate intervals across zero. TP6: I know that negative numbers are used in coordinate and graphing contexts. I know how to read and interpret information in tables, including timetables I know how to solve comparison, sum and difference problems using information presented in a line graph. I know how to complete information in tables, including timetables. **1.28 Common structures and the part-part-whole relationship (Progression from 1.25)** TP1:	**1.31 Problems with two unknowns (Progression from 1.28)** TP1: I know that problems with two unknowns can have one solution or more than one solution (or no solution). A relationship between the two unknowns can be described in different ways, including additively and multiplicatively. TP2: I know that model drawing can be used to expose the structure of problems with two unknowns. TP3: I know that a problem with two unknowns has only one solution if the sum of the two unknowns and the difference between them is given ('*sum-and-difference problems*') or if the sum of the two unknowns and a multiplicative relationship between them is given ('*sum-and-multiple problems*'). TP4: I know that other problems with two unknowns have only one solution. TP5: I know that some problems with two unknowns can't easily be solved using model drawing but can be solved by a 'trial-and-improvement' approach; these problems may have one solution, several solutions or an infinite number of solutions.

		I know numbers that can be made of groups of two are even; numbers that can't be made of two groups are odd. TP4: I know that the numbers six to ten can be partitioned in different ways. TP5: I know that the numbers six to ten can be partitioned into two parts; if we know one part, we can find the other. I know how to identify and represent numbers that are presented using objects, pictures, and number lines. I know how to represent and use number bonds within 20. (1AS–1) **1.5 Additive structures: introduction to aggregation and partitioning (Progression from EYFS composition)** TP1: I know that combining two or more parts to make a whole is called aggregation; the addition symbol can be used for aggregation. TP2: I know that the equals symbol can be used to show equivalence between the whole and the sum of the parts. TP3: I know that each addend represents a part, and	I know how to apply my knowledge of addition and subtraction to solve problems involving lengths and heights. **1.14 Addition and subtraction: two-digit numbers and multiples of ten (Progression from 1.5, 1.6 and 1.7)** TP1: I know that when finding ten more or ten less than any two-digit number, the ones digit does not change. TP2: I know that when ten is added or subtracted to/from a two-digit number, the tens digit changes and the ones digit stay the same. TP3: I know that knowledge of number facts within ten can be applied to adding or subtracting multiples of ten to/from a two-digit number. TP4: I know that two-digit numbers can be partitioned in different ways. I know how to find different combinations of coins that equal the same amounts of money. I know how to apply my knowledge of addition and subtraction to solve problems involving lengths and heights. **1.15 Addition: two-digit and two-digit numbers**	can be thought of as 'adding on' to find a missing part. TP4: I know that the order of addition and subtraction steps in a multi-step calculation can be chosen or manipulated such as to simplify the arithmetic. I know how to identify and represent numbers that are presented using different representations. I know how to add and subtract numbers mentally including adding ones, tens and hundreds to a 3-digit number. I know how to read and write numbers up to 1000 in numerals and words. (3NPV–2) I know how to apply my knowledge of addition, subtraction and inverse relationships to solve missing number problems. (3AS–3) **1.20 Algorithms: column addition (Progression from 1.15)** TP1: I know that any numbers can be added together using an algorithm called *'column addition'*. TP2: I know that the digits of the addends must be aligned correctly before the algorithm is applied. TP3:	hundred times the size of 0.01; 0.1 is ten times the size of 0.01. TP3: I know that we can count in hundredths up to and beyond one. TP4: I know that numbers with hundredths can be composed additively and multiplicatively. TP5: I know that numbers with tenths and hundredths are commonly used in measurement, scales and graphing contexts. TP6: I know that known facts and strategies, including column algorithms, can be applied to calculations for numbers with hundredths; the same approaches can be used for numbers with hundredths as are used for numbers with tenths. TP7: I know that numbers with hundredths can be rounded to the nearest tenth by examining the value of the hundredths digit or to the nearest whole number by examining the value of the tenths digit. TP8: I know that when one is divided into 1,000 equal parts, each part is one thousandth of the whole. Knowledge and strategies for numbers with tenths and hundredths can be applied to numbers with thousandths.	I know that mathematical relationships encountered at primary level are either additive or multiplicative; both of these can be observed within the structure of part–part–whole relationships. TP2: I know that problems in many different contexts can be solved by adding together the parts to find the whole. Different strategies can be used to calculate the whole, but the structure of the problem remains the same. I know how to measure perimeter of composite rectilinear shapes (cm/m). I know how to apply my knowledge of addition to calculate the perimeter of composite rectilinear shapes (cm/m). TP3: I know that if the value of the whole is known, along with the values of all but one of the parts, the value of the missing part can be calculated. Different strategies can be used to calculate the missing part, but the structure of the problem remains the same. TP4: I know that problems in many different contexts have the 'missing-part' structure. I know how to identify, compare and estimate acute, obtuse and reflex angles. (5G–1)	I know how to add and subtract any number using choosing the most efficient method for any given situation. I know how to find pairs of numbers that satisfy an equation with 2 unknowns. (6AS/MD–4) I know how to enumerate possibilities of combinations of two variables. I know how to express missing number problems algebraically. I know how to use simple formulae. I know how to generate and describe linear number sequences. I know how to apply my knowledge of addition, subtraction, and inverse relationships to solve missing number problems. And solve multi-step problems in context, deciding which operations and methods to use and why.

		these are combined to form the whole/sum. TP4: I know that breaking a whole down into two or more parts is called partitioning. I know how to read, write, and interpret mathematical statements involving +, - and =. (1AS–2) I know how to add and subtract one-digit and two-digit numbers to 20, including zero. **1.6 Additive structures: introduction to augmentation and reduction (Progression from EYFS composition)** TP1: I know that an addition context described by a 'first..., then..., now...,' story is an example of augmentation. TP2: I know that a subtraction context described by a 'first..., then..., now...,' story is an example of reduction. TP3: I know that given any two parts of the story I can work out the third part. TP4: I know that addition and subtraction are and inverse operation. I know how to read, write, and interpret mathematical	**(Progression from 1.5, 1.6 and 1.7)** TP1: I know that known strategies can be combined to add two multiples of ten to two single-digit numbers. TP2: I know that 2 two-digit numbers can be added by partitioning one or both into tens and ones. To be included in both TP's above: I know how to use rounding to check answers to calculations. I know how to estimate the answer to a calculation. I know how to add and subtract numbers mentally including adding ones or tens to a two-digit number, 2 two-digit numbers and 3 one-digit numbers. **1.16 Subtraction: two-digit and two-digit numbers (Progression from 1.5, 1.6 and 1.7)** TP1: I know that known strategies can be used to subtract a multiple of ten and a single-digit number from a two-digit number. TP2: I know that a two-digit number can be subtracted from a two-digit number by partitioning the subtrahend into tens and ones. To be included in both TPs' above:	I know that in column addition, the digits of the addends are added working from the least significant digit (on the right) to the most significant digit (on the left). TP4: I know that if any column sums to ten or greater, we must *'regroup'*. TP5: I know that the numbers within each column should be added in the most efficient order I know how to add and subtract numbers with up to 3-digits, using expanded column method. (3AS–2) I know how to apply my knowledge of addition, subtraction and inverse relationships to solve two-step problems in context, deciding which operations and methods to use and why. I know how to apply my knowledge of addition and subtraction to add and subtract amounts of money **1.21 Algorithms: column subtraction (Progression from 1.16)** TP1: I know that one number can be subtracted from another using an algorithm called *'column subtraction'*; the digits of the minuend and subtrahend must be aligned correctly; the algorithm is applied	I know how to interpret discrete and continuous data using appropriate graphical methods, including bar charts and time graphs. I know how to solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs. I know how to recognise that hundredths arise when dividing an object into 100 equal parts. **1.25 Addition and subtraction: money (Progression from 1.20 and 1.21)** TP1: I know that one penny is one hundredth of a pound; conventions for expressing quantities of money are based on expressing numbers with tenths and hundredths. TP2: I know that equivalent calculation strategies for addition can be used to efficiently add commonly used prices. TP3: I know that the 'working forwards'/'finding the difference' strategy for subtraction is an efficient way to calculate the change due when paying in whole pounds or notes. TP4:	I know how to identify angles where they meet at a point, are on a straight line, half a turn and other multiples of 90 degrees. I know how to use the properties of rectangles to deduce related facts and find missing lengths and angles. I know how to add and subtract numbers with more than 5-digits, using compact column method. I know how to apply my knowledge of addition, subtraction and inverse relationships to solve missing number problems. I know how to read and interpret information in tables, including timetables I know how to solve comparison, sum and difference problems using information presented in a line graph. I know how to complete information in tables, including timetables. I know how to apply my knowledge of addition, subtraction and angles to solve missing angle problems. **1.29 Using equivalences and the compensation property to calculate (Progression from 1.12, 1.13 and 1.19)** TP1: I know that if one addend is increased and the other is	

		statements involving +, - and =. (1AS–2) I know how to add and subtract one-digit and two-digit numbers to 20, including zero. I know how to apply my knowledge of addition, subtraction, and inverse relationships to solve missing number problems and solve one-step problems in context, deciding which operations and methods to use and why. **1.7 Addition and subtraction: strategies within 10 (Progression from EYFS composition)** TP1: I know that addition is commutative. TP2: I know that ten can be partitioned into pairs of numbers that sum to ten. TP3: I know that adding one gives one more and subtracting one gives one less. TP4: I know that consecutive numbers have a difference of one. TP5: I know that adding/subtracting two to an odd number give the next/previous odd number; adding/subtracting two to	I know how to use rounding to check answers to calculations. I know how to estimate the answer to a calculation. I know how to add and subtract numbers mentally including adding ones or tens to a 2-digit number, two 2-digit numbers and three 1-digit numbers. I know how to apply my knowledge to solve simple problems that involve giving change in a practical context. I know how to recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value I know how to find different combinations of coins that equal the same amounts of money I know how to solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change I know how to tell the time to five minutes, including quarter past/to the hour and draw the hands on a clock face to show these times. I know how to write the time to five minutes, including quarter past/to the hour and draw the hands on a clock face to show these times.	working from the least significant digit (on the right) to the most significant digit (on the left). TP2: I know that if there is an insufficient number of any unit to subtract from in a given column, we must exchange from the column to the left. I know how to add and subtract numbers with up to 3-digits, using expanded column method. (3AS–2) I know how to apply my knowledge of addition, subtraction and inverse relationships to solve two-step problems in context, deciding which operations and methods to use and why. I know how to apply my knowledge of subtraction to subtract amounts of money. I know the number of seconds in a minute and the number of days in each month, year and leap year. I know how to tell the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks I know how to write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks.	I know that column methods can be used to add and subtract quantities of money. TP5: I know that finding change when purchasing several items uses the part–part–(part–)whole structure. I know how to apply my knowledge of addition, subtraction and inverse relationships to solve two-step problems in context, deciding which operations and methods to use and why. I know how to apply my knowledge of addition, subtraction and inverse relationships to solve missing number problems. I know how to solve simple measure and money problems involving fractions and decimals to 1dp.	decreased by the same amount, the sum stays the same. TP2: I know that if one addend is increased (or decreased) and the other is kept the same, the sum increases (or decreases) by the same amount. TP3: I know that if the minuend and subtrahend are changed by the same amount, the difference stays the same. (same difference) TP4: I know that if the minuend is increased (or decreased) and the subtrahend is kept the same, the difference increases (or decreases) by the same amount. TP5: I know that if the minuend is kept the same and the subtrahend is increased (or decreased), the difference decreases (or increases) by the same amount. TP6: I know that the value of the expressions on each side of an equals symbol must be the same; addition and subtraction are inverse operations. We can use this knowledge to balance equations and solve problems. I know how to add and subtract numbers with more than 5-digits, using compact column method.	

		an even number gives the next/previous even number TP6: I know that consecutive odd/even numbers have a difference of two. TP7: I know that when zero is added/subtracted to/from a number, the number remains unchanged. TP8: I know that subtracting a number form itself gives a difference of zero. TP9: I know that doubling a whole number always gives an even number. TP10: I know that addition and subtraction facts for the pairs five and three , and six and three, can be related to known facts and strategies. I know how to add and subtract one-digit and two-digit numbers to 20, including zero. **1.8 Composition of numbers: multiples of 10 up to 100 (Progression from EYFS composition)** TP1: I know that one ten is equivalent to ten ones. TP2: I know that multiples of ten can be represented using their names and numerals. TP3:	I know the number of minutes in an hour and the number of hours in a day. I know how to apply my knowledge of comparing numbers compare and sequence intervals of time. I know how to apply my knowledge of addition and subtraction to solve problems involving time.	I know how to apply my knowledge of comparing numbers to compare durations of events, for example to calculate the time taken by events or tasks. I know how to apply my knowledge of estimating numbers to estimate time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes, hours and o'clock; use vocabulary such as a.m./p.m., morning, afternoon, noon and midnight.		I know how to add and subtract numbers mentally with increasingly large numbers. I know how to apply my knowledge of addition, subtraction and inverse relationships to solve multi-step problems in context, deciding which operations and methods to use and why. I know how to read and interpret information in tables, including timetables I know how to solve comparison, sum and difference problems using information presented in a line graph. I know how to complete information in tables, including timetables.	

		I know that 0-10 number line can be used to estimate the positions of multiples of 10 on a 0-100 number line. <u>TP4:</u> I know that adding/subtracting ten to a multiple of ten gives the next/previous multiple of ten. <u>TP5:</u> I know that known facts for the numbers within ten can be used to add and subtract in multiples of ten by unitising. I know how to add and subtract one-digit and two-digit numbers to 20, including zero. I know how to identify ten more or less than a given number. **<u>1.9 Composition of numbers: 20-100 (Progression from EYFS composition)</u>** <u>TP1:</u> I know that there is a set counting sequence for counting to 100 and beyond. <u>TP2:</u> I know that objects can be counted efficiently by making groups of ten. <u>TP3:</u> I know that each number on the 0-100 number line has a unique position. <u>TP4:</u>					

		I know that the relative size of two two-digit numbers can be determined by first examining the tens digits and then the ones digits. TP5: I know that each two-digit number can be partitioned into a tens part and a ones part. TP6: I know that the tens and ones structure of two-digit numbers can be used to support additive calculation. I know how to read and write numbers to 100. I know how to add and subtract one-digit and two-digit numbers to 20, including zero. **1.10 Composition of number: 11-19 (Progression from EYFS composition)** TP1: I know that the digits in the numbers 11-19 tell us about their value. TP2: I know that the number 11-19 can be formed by combining a ten and ones and can be partitioned into tens and ones. TP3: I know that a number is even/odd if the ones digit is even/odd; it can/can't be made from groups of two. TP4:					

		I know that doubling the numbers 6-9 gives and even teen number. TP5: I know that addition and subtraction facts within 10 can be applied to addition and subtraction within 20. I know how to read and write numbers to 20 in numerals and words I know how to add and subtract one-digit and two-digit numbers to 20, including zero. I know how to recognise and know the value of different denominations of coins and notes. I know how to recognise and use symbols for pounds (£) and pence (p). I know how to describe time [e.g., quicker, slower, earlier, later] I know how to sequence events in chronological order using language [e.g., before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening]. I know how to recognise and use language relating to dates, including days of the week, weeks, months and years. I am beginning to write the time (hours, minutes, seconds). I know how to tell the time to the hour and half past the hour and draw the					

		hands on a clock face to show these times.					

Spine 2: Multiplication and Division	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	Vocabulary: Doubling Halving Number patterns sharing	Vocabulary: Grouping Sharing	Vocabulary: Array Divide Dividend Division Division fact Divisor Equal groups of Factor Left over Multiplication Multiplication fact Multiple Multiply Product Quotient Times	Vocabulary: Factor Product	Vocabulary: Distributive law Short division Short multiplication	Vocabulary: Common factor Common multiple Cube number Divisible Factor pair Long division Long multiplication Prime factor Prime number Square number	Vocabulary: Factorise Prime factor
		2.1 Counting, unitising and coins (Progression from EYFS Cardinality and Counting) TP1: We can count efficiently by counting in groups of two. TP2: We can count efficiently by counting in groups of ten. TP3: We can count efficiently by counting in groups of five. TP4:	**2.2 Structures: multiplication representing equal groups (Progression from 1.1 and 1.3)** TP1: Objects can be grouped into equal or unequal groups. TP2: When describing equally grouped objects, the number of groups and the size of the groups must both be defined.	**2.7 Times tables: 2,4 and 8, and the relationship between them (Progression from)** TP1: Counting in multiples of four can be represented by the four times table. Adjacent multiples of four have a difference of four. Facts from the four times table can be used to solve multiplication and division problems with different structures. TP2:	**2.10 Connecting multiplication and division, and the distributive law (Progression from)** I know how to find factor pairs. TP1: Multiplication is commutative; division is not commutative. TP2: Multiplication is distributive: multiplication facts can be derived from related known facts by	**2.18 Using equivalence to calculate** TP1: For multiplication, if there is a multiplicative *increase* to one factor and a corresponding *decrease* to the other factor, the product stays the same. TP2: For division, if there is a multiplicative change to the dividend and a corresponding change to the divisor, the quotient stays the same.	**2.23 Multiplication strategies for larger numbers and long multiplication (Progression from 2.19)** I know how to identify common multiples, including LCM. I know how to identify common factors of a group of numbers, including HCF. I know how to identify any prime number. I know how to multiply any number by a 1-digit number using compact

		A coin has a value which is independent of its size, shape, colour or mass. TP5: The *number* of coins in a set is different from the *value* of the coins in a set; knowledge of counting in groups of two, five or ten can be used to work out the value of a set of identical low-denomination coins. TP6: Knowledge of counting in groups of two, five or ten can be used to work out how many identical low-denomination coins are needed to make a given value. I know how to count forwards and backwards in multiples of 2, 5 and 10, up to 10 multiples, beginning with any multiple, and count forwards and backwards through the odd numbers. (1NF–2) I know how to recognise and know the value of different denominations of coins and notes. I know how to recognise and use symbols for pounds (£) and pence (p). I know how to apply my knowledge of multiplication, division and to solve one-step problems.	TP3 (Progression from 1.11): Equal groups can be represented with a repeated addition expression. TP4: Equal groups can be represented with a multiplication expression. TP5: Multiplication expressions can be written for cases where the groups each contain zero items, and for cases where the groups each contain one item. I know how to recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables. I know how to read, write and interpret mathematical statements involving ×, ÷ and =. I know how to calculate mathematical statements for multiplication within the multiplication tables **2.3 Times tables: groups of 2 and commutativity (part 1) (Progression from 2.1)** TP1: For equally grouped objects, the number of groups is a factor, the group size is a factor, and the overall number of objects is the product; this can be represented with a multiplication equation. Counting in multiples of two can be used to find the	Products in the four times table are double the products in the two times table; products in the two times table are half of the products in the four times table. TP3: Counting in multiples of eight can be represented by the eight times table. Adjacent multiples of eight have a difference of eight. Facts from the eight times table can be used to solve multiplication and division problems with different structures. TP4: Products in the eight times table are double the products in the four times table; products in the four times table are half of the products in the eight times table. Products that are in the two, four and eight times tables share the same factors. TP5: Divisibility rules can be used to find out whether a given number is divisible (to give a whole number) by two, four or eight. I know how to recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables. (3NF–2) I know how to multiply a 2-digit numbers by a 1-digit number **2.8 Times tables: 3,6 and 9, and the**	partitioning one of the factors, and this can be interpreted as partitioning the number of groups; two-part problems that involve addition/subtraction of products with a common factor can be efficiently solved by applying the distributive law. TP 3: The distributive law can be used to derive multiplication facts beyond known times tables. I know how to use place value, known and derived facts to multiply and divide mentally, including multiplying by 0. I know how to apply my knowledge of addition, multiplication to solve problems that require the use of distributive law to multiply two-digit numbers by one-digit numbers. (4MD–3) **2.11 Times tables: 11 and 12** TP1: The distributive law can be used to build up the 11 times table by partitioning 11 into 10 and 1. Adjacent multiples of 11 have a difference of 11. TP2: The distributive law can be used to build up the 12 times table by partitioning 12 into 10 and 2. Adjacent multiples of 12 have a difference of 12. TP3:	I know how to multiply and divide numbers mentally drawing upon known facts. (5NF–1) **2.19 calculation: x/÷ decimal fractions by whole numbers** TP1: Decimal fractions (with a whole number of tenths or hundredths) can be multiplied by a whole number by using known multiplication facts and unitising. TP2: Multiplying by 0.1 is equivalent to dividing by 10; multiplying by 0.01 is equivalent to dividing by 100. Understanding of place value can be used to divide a number by 10/100: when a number is divided by 10, the digits move one place to the right; when a number is divided by 100, the digits move two places to the right. TP3: To multiply a single-digit number by a decimal fraction with up to two decimal places, convert the decimal fraction to an integer by multiplying by 10 or 100, perform the resulting calculation using an appropriate strategy, then adjust the product by dividing by 10 or 100. TP4: If the multiplier is less than one, the product is less than the multiplicand; if the multiplier is greater than one, the product is greater	short multiplication, including numbers up to 3dp. TP1: When multiplying two numbers that are multiples of 10, 100 or 1,000, multiply the number of tens, hundreds or thousands and then adjust the product using place value. TP2: When multiplying two numbers where one number is a multiple of 10, 100 or 1,000, use short multiplication and adjust the product using place value. TP3: Two two-digit numbers can be multiplied by partitioning one of the factors, calculating partial products and then adding these partial products. This method can be extended to multiplication of three-digit numbers by two-digit numbers. TP4: *'Long multiplication'* is an algorithm involving multiplication, then addition of partial products, which supports multiplication of two numbers with two or more digits. TP5: Multiplication where one of the factors is a composite number can be carried out by multiplying one factor and then the other factor.

			product when the group size is two. TP2: Counting in multiples of two can be represented by the two times table. Adjacent multiples of two have a difference of two. Facts from the two times table can be used to solve problems about groups of two. TP3: Factor pairs can be written in either order, with the product remaining the same (commutativity). I know how to recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables. I know how to read, write and interpret mathematical statements involving ×, ÷ and =. I know how to calculate mathematical statements for multiplication within the multiplication tables. (2MD–1) **2.4 Times tables: groups of 10 and of 5, and factors of 0 and 1 (Progression from 2.1)** TP1: Counting in multiples of ten can be represented by the ten times table. Adjacent multiples of ten have a difference of ten. Facts from the ten times table can be used to solve problems about groups of ten.	**relationship between them** TP1: Counting in multiples of three can be represented by the three times table. Adjacent multiples of three have a difference of three. Facts from the three times table can be used to solve multiplication and division problems with different structures. TP2: Counting in multiples of six can be represented by the six times table. Adjacent multiples of six have a difference of six. Facts from the six times table can be used to solve multiplication and division problems with different structures. TP3: Products in the six times table are double the products in the three times table; products in the three times table are half of the products in the six times table. TP4: Counting in multiples of nine can be represented by the nine times table. Adjacent multiples of nine have a difference of nine. Facts from the nine times table can be used to solve multiplication and division problems with different structures. TP5: Products in the nine times table are triple the products in the three times table. Products that are in	Products in the 12 times table are double the products in the six times table; products in the six times table are half of the products in the 12 times table. TP4: Divisibility rules can be used to find out whether a given number is divisible (to give a whole number) by 11 or 12. I know how to use place value, known and derived facts to multiply and divide mentally, including multiplying and dividing by 1. I know how to recall multiplication and division facts for multiplication tables up to 12 × 12. (4NF–1) I know how to apply my knowledge of addition, multiplication to solve problems that require the use of distributive law to multiply two-digit numbers by one-digit numbers. (4MD–3) I know how to use place value, known and derived facts to multiply and divide mentally, including multiplying together three numbers. **2.12 Division with remainders** TP1: Objects can be divided into equal groups, sometimes with a remainder; objects can be shared equally, sometimes with a	than the multiplicand. TP5: To divide any decimal fraction with up to two decimal places by a single-digit number, convert the decimal fraction to an integer by multiplying by 10 or 100, perform the resulting calculation using an appropriate strategy, then adjust the quotient by dividing by 10 or 100. I know how to use my knowledge of place value to multiply and divide numbers by 10, 100 and 1000 where the answers are up to 2dp. (5NPV–1 and 5MD–1) I know how to multiply a 4-digit number by a 1-digit number using compact short multiplication, including numbers up to 2dp. I know how to multiply a 4-digit number by a 2-digit number using compact long multiplication. (5MD–3) I know how to divide numbers up to 4-digits by a 1-digit number using short division. (5MD–4) **2.20 Multiplication with three factors and volume** TP1: Volume is the amount of space that something occupies. TP2:	I know how to perform mental calculations, including with mixed operations and large numbers. I know how to multiply any number by a 2-digit number. (6AS/MD–1) **2.24 Division: dividing by two-digit divisors** TP1: Any two- or three-digit dividend can be divided by a two-digit divisor by skip counting in multiples of the divisor (quotient < 10); these calculations can be recorded using the short or long division algorithms. TP2: Any three- or four-digit dividend can be divided by a two-digit divisor using the short or long division algorithms (including quotient ≥ 10). TP3: When there is a remainder, the result can be expressed as a whole-number quotient and a whole-number remainder, as a whole-number quotient and a proper-fraction remainder, or as a decimal-fraction quotient. I know how to divide any number by a 2-digit number using compact long division expressing remainders as whole numbers or fractions.

			TP2: Counting in multiples of five can be represented by the five times table. Adjacent multiples of five have a difference of five. Facts from the five times table can be used to solve problems about groups of five. TP3: Skip counting and grouping can be used to explore the relationship between the five times table and the ten times table. TP4: When zero is a factor, the product is zero. When one is a factor, the product is equal to the other factor (if there are only two factors). I know how to recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables. I know how to read, write and interpret mathematical statements involving ×, ÷ and =. I know how to calculate mathematical statements for multiplication within the multiplication tables. (2MD–1) **2.5 Commutativity (part 2), doubling and halving** TP1: The same multiplication equation can have two different grouping interpretations. Problems about two/five/ten equal groups can be solved using facts from the two/five/ten	the three, six and nine times tables share the same factors. TP6: Divisibility rules can be used to find out whether a given number is divisible (to give a whole number) by three, six or nine. I know how to multiply a 2-digit numbers by a 1-digit number **2.9 Times tables: 7 and patterns within/across times tables** TP1: Counting in multiples of seven can be represented by the seven times table. Adjacent multiples of seven have a difference of seven. Facts from the seven times table can be used to solve multiplication and division problems with different structures. TP2: When both factors are odd numbers, the product is an odd number; when one factor is an odd number and the other is an even number, the product is an even number; when both factors are even numbers, the product is an even number. TP3: When both factors have the same value, the product is called a square number; square numbers can be represented by objects arranged in square arrays. TP4:	remainder; a remainder can be represented as part of a division equation. TP2: If the dividend *is* a multiple of the divisor, there is *no* remainder; if the dividend *is not* a multiple of the divisor, there *is* a remainder. The remainder is always less than the divisor. TP3: When solving contextual problems involving remainders, the answer to a division calculation must be interpreted carefully to determine how to make sense of the remainder. **2.13 Calculation: multiplying and dividing by 10 or 100** TP1: Finding 10 times as many is the same as multiplying by 10 (for positive numbers); to multiply a whole number by 10, place a zero after the final digit of that number. TP2: To divide a multiple of 10 by 10, remove the final zero digit (in the ones place) from that number. TP3: Finding 100 times as many is the same as multiplying by 100 (for positive numbers); to multiply a whole number by 100, place two zeros after the final digit of that number. TP4: To divide a multiple of 100 by 100, remove the final	Volume is measured in cubic units, such as cubic centimetres (cm³) and cubic metres (m³). I know how to estimate volume (e.g., using 1 cm 3 blocks to build cubes and cuboids) and capacity (e.g., using water). TP3: The volume of a cuboid can be calculated by multiplying the length, width and height. TP4: Both the commutative law and the associative law can be applied when multiplying three or more numbers. TP5: The choice of which order to multiply in can be made according to the simplest calculation. I know how to use all four operations to solve problems involving capacity, volume and mass, with decimal notation including scaling. **2.21 Factors, multiples, prime numbers and composite numbers** TP1: Factors are positive integers that can be multiplied together to equal a given number. TP2: Systematic methods can be used to find all factors of a number; factors come in pairs; all positive integers have an even number of	**2.25 Using compensation to calculate** TP1: For multiplication, if there is a multiplicative change to one factor, the product changes by the same scale factor. TP2: For division, if there is a multiplicative change to the dividend and the divisor remains the same, the quotient changes by the same scale factor. TP3: For division, if there is a multiplicative increase to the divisor and the dividend remains the same, the quotient decreases by the same scale factor; if there is a multiplicative decrease to the divisor and the dividend remains the same, the quotient increases by the same scale factor. I know how to apply my knowledge of multiplication, division and inverse relationships to solve problems involving more complex positive integer scaling. (5NF–2) I know how to apply my knowledge of multiplication, division and inverse relationships to solve multi-step problems. **2.26 Mean average and equal shares** TP1:

			times table. (commutativity) TP2: If two is a factor, knowledge of doubling facts can be used to find the product; problems about doubling can be solved using facts from the two times table. TP3: Halving is the inverse of doubling; problems about halving can be solved using facts from the two times table and known doubling facts. TP4: Products in the ten times table are double the products in the five times table; products in the five times table are half of the products in the ten times table. I know how to recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables. I know how to read, write and interpret mathematical statements involving ×, ÷ and =. I know how to calculate mathematical statements for multiplication within the multiplication tables. (2MD–1) I know how to calculate mathematical statements for division within the multiplication tables. I know how to apply my knowledge of	Divisibility rules can be used to find out whether a given number is divisible (to give a whole number) by particular divisors. I know how to multiply a 2-digit numbers by a 1-digit number I know how to use my knowledge of place value to multiply and divide 1 and 2-digit numbers by 10 and 100 where the answers are up to 1dp. (3NPV–1)	two zero digits (in the tens and ones places) from that number. TP5: Multiplying a number by 100 is equivalent to multiplying by 10, and then multiplying the product by 10. Dividing a multiple of 100 by 100 is equivalent to dividing by 10, and then dividing the quotient by 10. TP6: If one factor is made 10 times the size, the product will be 10 times the size. If the dividend is made 10 times the size, the quotient will be 10 times the size. TP7: If one factor is made 100 times the size, the product will be 100 times the size. If the dividend is made 100 times the size, the quotient will be 100 times the size. I know how to use my knowledge of place value to multiply and divide 1 and 2-digit numbers by 10 and 100. (4NPV–1 and 4MD–1) **2.14 Multiplication: partitioning leading to short multiplication** TP1: The distributive law can be applied to multiply any two-digit number by a single-digit number, by partitioning the two-digit number into tens and ones, multiplying the parts by the single-digit number, then adding the partial products. TP2:	factors apart from square numbers, which have an odd number of factors; numbers with more than two factors are called composite numbers. TP3: Prime numbers are positive integers that have exactly two factors. TP4: A common factor is a factor that is shared by two or more numbers. A prime factor is a factor that is also a prime number. TP5: A multiple of a number is the product of that number and an integer; a common multiple is a multiple that is shared by two or more numbers. TP6: The factor pairs of '100' can be used to support efficient calculation. I know how to identify multiples. I know how to identify all the factor pairs of a number. I know how to identify common factors of two numbers. (5MD–2) I know how to use the terms prime and composite. I know and can recall the prime numbers up to 19. I know how to identify prime numbers up to 100.	The mean is the size of each part when a quantity is shared equally. TP2: The mean is defined as the sum of all the numbers in a set of data divided by the number of numbers/values that make up the set of data. If we know the mean of a set of data and the number of numbers/values in that set, we can calculate the total of the set. The mean of a set changes if the total value of the set changes or if the number of numbers/values in the set changes. TP3: The mean can be used to compare data. TP4: The mean is not always an appropriate representation of a set of data. I know how to interpret the mean as an average. **2.27 Scale Factors, ratio and proportional reasoning** TP1: Multiplication and division can be used to calculate unknown values in correspondence (cardinal comparison) problems. TP2: Multiplication and understanding of correspondence can be used to calculate the number of possible combinations of items.

			multiplication, division and inverse relationships to solve missing number problems and solve one-step problems (2MD–2) **2.6 Structures: quotative and partitive division** TP1: Objects can be grouped equally, sometimes with a remainder. TP2: Division equations can be used to represent 'grouping' problems, where the total quantity (dividend) and the group size (divisor) are known; the number of groups (quotient) can be calculated by skip counting in the divisor. (quotative division) TP3: Division equations can be used to represent 'sharing' problems, where the total quantity (dividend) and the number we are sharing between (divisor) are known; the size of the shares (quotient) can be calculated by skip counting in the divisor. (partitive division) TP4: Strategies for finding the quotient, that are more efficient than skip counting, include using known multiplication facts and, when the divisor is two, using known halving facts. TP5: When the dividend is zero, the quotient is zero; when		Any two-digit number can be multiplied by a single-digit number using an algorithm called *'short multiplication'*; the digits of the factors must be aligned correctly; the algorithm is applied working from the least significant digit (on the right) to the most significant digit (on the left); if the product in any column is ten or greater, we must *'regroup'*. TP3: The distributive law can be applied to multiply any three-digit number by a single-digit number, by partitioning the three-digit number into hundreds, tens and ones, multiplying the parts by the single-digit number, then adding the partial products. TP4: Any three-digit number can be multiplied by a single-digit number using the short multiplication algorithm. I know how to multiply a 3-digit number by a 1-digit number. I know how to apply my knowledge of multiplication, division and inverse relationships to solve missing number problems (4MD–2) I know how to apply my knowledge of multiplication, division and inverse relationships to solve correspondence problems in which n objects are connected to m objects	I know how to recognise squared and cubed numbers using the correct notation. I know how to calculate squared and cubed numbers. I know how to apply my knowledge of multiples, factors, prime, square and cube numbers to solve problems. **2.22 Combining multiplication with addition and subtraction** TP1: Multiplication can be combined with addition and subtraction; when there are no brackets, multiplication is completed before addition or subtraction; when there are brackets, the calculation within the brackets is completed first. TP2: When adding or subtracting multiplication expressions that have a common factor, the distributive law can be applied. I know how to apply my knowledge of addition and multiplication to solve problems that require the use of distributive law to multiply three-digit numbers by one-digit numbers. (6AS/MD–2) I know how to apply my knowledge of	TP3: Scaling can be used to make and interpret maps. TP4: There is a proportional relationship between the dimensions of similar shapes; if the scale factor and the dimensions of one of the shapes is known, the dimensions of the similar shape can be calculated; if the dimensions of both of the shapes are known, the scale factor can be calculated. I know how to solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts. I know how to apply my knowledge of multiplication, division and inverse relationships to solve problems involving simple rates. **2.28 Combining division with addition and subtraction** TP1: Division can be combined with addition and subtraction; when there are no brackets, division is completed before addition or subtraction; when there are brackets, the calculation within the brackets is completed first. TP2: When adding or subtracting division expressions that have a common divisor, the

			the dividend is equal to the divisor, the quotient is one; when the divisor is equal to one, the quotient is equal to the dividend. I know how to recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables. I know how to read, write and interpret mathematical statements involving ×, ÷ and =. I know how to calculate mathematical statements for multiplication within the multiplication tables. (2MD–1) I know how to calculate mathematical statements for division within the multiplication tables .		**2.15 Division: partitioning leading to short division** TP1: Any two-digit number can be divided by a single-digit number, by partitioning the two-digit number into tens and ones, dividing the parts by the single-digit number, then adding the partial quotients; if dividing the tens gives a remainder of one or more tens, we must exchange the remaining tens for ones before dividing the resulting ones value by the single-digit number. TP2: Any two-digit number can be divided by a single-digit number using an algorithm called *'short division'*; the algorithm is applied working from the most significant digit (on the left) to the least significant digit (on the right); if there is a remainder in the tens column, we must *'exchange'*. TP3: Any three-digit number can be divided by a single-digit number, by partitioning the two-digit number into hundreds, tens and ones, dividing the parts by the single-digit number, then adding the partial quotients; if dividing the hundreds gives a remainder of one or more hundreds, we must exchange the remaining hundreds for tens before dividing the resulting tens value by the	multiplication, division and inverse relationships to solve missing number problems. I know how to apply my knowledge of shape and multiplication to calculate the area of squares and rectangles (cm 2, m 2).	distributive law can be applied. I know how to use my knowledge of the order of operations to carry out linear calculations involving the four operations. I know how to apply my knowledge of addition and multiplication to solve problems that require the use of distributive law to multiply three-digit numbers by one-digit numbers. (6AS/MD–2) **2.29 Decimal place-value knowledge, multiplication and division** TP1: To multiply a number by 10/100/1,000, move the digits one/two/three places to the left; to divide a number by 10/100/1,000, move the digits one/two/three places to the right. TP2: Measures can be converted from one unit to another using knowledge of multiplication and division by 10/100/1,000. I know how to use my knowledge of place value to multiply and divide numbers by 10, 100 and 1000 where the answers are up to 3dp. (6NPV–1) I know how to solve problems involving the calculation and conversion

					single-digit number. TP4: Any three-digit number can be divided by a single-digit number using the short-division algorithm. I know how to divide a 3-digit number by a 1-digit number using short division, expressing remainders as whole number. **2.16 Multiplicative contexts: area and perimeter 1** TP1: Perimeter is the distance around the edge of a two-dimensional (2D) shape. TP2: Perimeter is measured in units of length and can be calculated by adding together the lengths of the sides of a 2D shape. TP3: Multiplication can be used to calculate the perimeter of a regular polygon; when the perimeter is known, side-lengths can be calculated using division. TP4: Area is the measurement of the surface of a flat item. TP5: Area is measured in square units, such as square centimetres (cm^2) and square metres (m^2). TP6: The area of a rectangle can be calculated using		of units of measure, using decimal notation up to three decimal places where appropriate. **2.30 Multiplicative contexts: area and perimeter 2** TP1: The area of a parallelogram can be calculated by multiplying the base by the perpendicular height; all parallelograms with the same base and perpendicular height will have the same area. TP2: The area of a triangle can be calculated by multiplying the base by the perpendicular height and then dividing by two. TP3: Shapes with the same area can have different perimeters; shapes with the same perimeter can have different areas. TP4: When a shape has been transformed by a scale factor, the perimeter is also transformed by the same scale factor. I know how to apply my knowledge of shape and ratio to solve problems involving similar shapes where the scale factor is known or can be found. I know how to apply my knowledge of shape and the four operations to calculate the area of parallelograms and triangles.

					multiplication; the area of a composite rectilinear shape can be found by splitting the shape into smaller rectangles. I know how to measure the perimeter of a rectilinear shape (cm/m). I know how to calculate the perimeter of a rectilinear shape (cm/m). I know how to calculate the area of rectilinear shapes by counting squares. **2.17 Structures: using measures and comparison to understand scaling** TP1: A longer length can be described in terms of a shorter length using the language of 'times'; the longer length can be calculated, if the shorter length is known, using multiplication. TP2: A shorter length can be described in terms of a longer length using the language of fractions; the shorter length can be calculated, if the longer length is known, using division. TP3: Other measures can be compared using the language of 'times' and fractions and calculated using multiplication or division.		I know how to recognise that shapes with the same areas can have different perimeters and vice versa. I know how to recognise when it is possible to use formulae to find the area of a shape. I know how to recognise when it is possible to use formulae for volume.

					I know how to apply my knowledge of multiplication, division and inverse relationships to solve problems involving positive integer scaling. (3NF–3 and 4NF–3) I know how to apply my knowledge of multiplication, division and inverse relationships to solve two-step problems. (4NF–2 and 3MD–1)		

Counting (Daily)	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
		I know how to count forwards and backwards in halves.	I know how to count forwards and backwards in quarters and thirds.	I know how to count forwards and backwards in tenths.	I know how to count forwards and backwards in hundredths.	I know how to count forwards and backwards in fifths, sixths and eighths.	I know how to count forwards and backwards in any fraction.

Spine 3: Fractions	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	Vocabulary: Half Parts of a whole	Vocabulary: Equal grouping Equal part Equal sharing Fraction One of two equal parts quarter	Vocabulary: Denominator Equivalence Non-unit fraction Numerator One of three equal parts One third, two thirds Two halves Two quarters, three quarters Unit fraction Vinculum	Vocabulary: Sixths Sevenths Eighths Tenths	Vocabulary: Decimal equivalent Decimal fraction Decimal place Decimal point Hundredths Mixed number Proper fraction Proportion Simplify	Vocabulary: Percentage thousandths	Vocabulary: Ratio proportion
		3.0 Guidance on the teaching of fractions in Key Stage 1 I know how to recognise and name $\frac{1}{2}$ and $\frac{1}{4}$ of an object, shape or quantity. I know how to find $\frac{1}{2}$ and $\frac{1}{4}$ of an object, shape or quantity.	**3.0 Guidance on the teaching of fractions in Key Stage 1** I know how to recognise the equivalence of $\frac{1}{2}$ and $\frac{2}{4}$. I know how to recognise, name and write fractions $\frac{1}{2}$, $\frac{1}{4}$, $\frac{2}{4}$ and $\frac{3}{4}$ of a length, shape, set of objects or quantity.	**3.1 Preparing for fraction: the part-whole relationship** TP1: Any element of a whole is a part; if a whole is defined, then a part of this whole can be defined. TP2: A whole can be divided into equal parts or unequal	**3.5 Working across one whole: improper fractions and mixed numbers** I know how to recognise and write decimal equivalents to $\frac{1}{2}$, $\frac{1}{4}$ and $\frac{3}{4}$ I know how to use diagrams to recognise and find equivalent fractions whose denominators are multiples	**3.7 Finding equivalent fractions and simplifying fractions** I know how to recognise and use thousandths and relate them to tenths and hundredths. I know how to recognise and write decimal numbers as fractions containing thousandths.	**3.9 Multiplying fractions and dividing fraction by a whole number** I can recognise and convert a mixed number to an improper fraction and vice versa, using the concept of equivalent fractions. I know how to compare fractions, including improper fractions. 6F–2 and 6F–3

			I know how to find fractions $\frac{1}{2}, \frac{1}{4}, \frac{2}{4}$ and $\frac{3}{4}$ of a length, shape, set of objects or quantity. I know how to compare fractions with the same denominator within one whole, using concrete and pictorial objects. I know how to order fractions with the same denominator within one whole, using concrete and pictorial objects. I know how to add and subtract fractions with the same denominator within one whole, using concrete and pictorial objects.	parts. TP3: The relative size of parts can be compared. TP4: If one of the equal parts and the number of equal parts are known, these can be used to construct the whole. I know how to recognise that tenths arise from dividing a whole into 10 equal parts. **3.2 Unit fractions: identifying, representing and comparing** TP1: A whole can be divided into any number of equal parts. TP2: Fraction notation can be used to describe an equal part of the whole. One equal part of a whole is called a unit fraction. Each unit fraction has a name. TP3: Fractional notation can be applied to represent one part of a whole in different contexts. TP4: Equal parts do not need to look the same. TP5: Unit fractions can be compared and ordered by looking at the denominator. The greater the denominator, the smaller the fraction.	of the same number and under 100. TP1: Quantities made up of both wholes and parts can be expressed as mixed numbers. TP2: Mixed numbers can be placed on a number line. TP3: Understanding how to compare and order proper fractions supports the comparison and ordering of mixed numbers. TP4: Mixed numbers can be partitioned and combined in the same way as whole numbers. TP5: Mixed numbers can be written as improper fractions. TP6: Improper fractions can be added and subtracted in the same way as proper fractions. I can recognise mixed numbers and improper fraction. I can recognise and convert a mixed number to an improper fraction and vice versa. (4F–2) I know how to compare non-unit fractions and fractions with the same denominators.	I know how to recognise and write decimal numbers as fractions. (5F–3) I know how to find both unit and non-unit fractions with a denominator under 1000 of a length, shape, set of objects or quantity. (5F–1) Recap - I know how to multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams. TP1: When two fractions have different numerators and denominators to one another but share the same numerical value, they are called ‘equivalent fractions. TP2: Equivalent fractions share the same proportional (multiplicative) relationship between the numerator and denominator. Equivalent fractions can be generated by maintaining that relationship through the process of multiplication and division. TP3: Fractions can be simplified by dividing both the numerator and denominator by a common factor. I know how to recognise and find equivalent fractions of a given fraction whose denominators are multiples of the same number. (5F–2)	I know how to order fractions, including improper fractions. I know how to add and subtract fractions with different denominators using the concept of equivalent fractions. I know how to add mixed numbers and improper fractions. I know how to subtract mixed numbers and improper fractions. TP1: When a fraction is multiplied by a proper fraction, it makes it smaller. To multiply two fractions, multiply the numerators and multiply the denominators. TP2: When a fraction is divided by a whole number, it makes it smaller. To divide a fraction by a whole number, convert it to an equivalent multiplication. TP3: A more efficient method can be used to divide a fraction by a whole number when the whole number is a factor of the numerator. I know how to multiply simple pairs of proper fractions, writing the answer in its simplest form. I know how to associate a fraction with division and divide proper fractions by whole numbers.

				TP6: If the size of a unit fraction is known, the size of the whole can be worked out by repeated addition of that unit fraction. I know how to compare unit fractions and fractions with the same denominators. I know how to order unit fractions and fractions with the same denominator. (3F–3) I know how to recognise, name and write unit fractions with a denominator under 10 of a length, shape, set of objects or quantity. I know how to find unit fractions with denominators under 10 of a length, shape, set of objects or quantity. (3F–1 and 3F–2) **3.3 Non-unit fractions: identifying, representing and comparing** **Non-unit fractions** TP1: All non-unit fractions are made up of more than one of the same unit fraction. TP2: Non-unit fractions are written using the same convention as unit fractions. A non-unit fraction has a numerator greater than one. TP3: When the numerator and the denominator in a	I know how to order non-unit fractions and fractions with the same denominator. (4F–1) I know how to add and subtract fractions with the same denominator, including fractions >1 **3.6 Multiplying whole numbers and fractions** TP1: Repeated addition of proper and improper fractions can be expressed as multiplication of a fraction by a whole number. TP2: Repeated addition of a mixed number can be expressed as multiplication of a mixed number by a whole number. TP3: Finding a unit fraction of a quantity can be expressed as a multiplication of a whole number by a fraction. TP4: A non-unit fraction of a quantity can be calculated by first finding a unit fraction of that quantity. TP5: If the size of a non-unit fraction is known, the size of the unit fraction and then the size of the whole can be found. I know how to solve problems involving increasingly harder fractions to calculate	**3.8 Common denomination: more adding and subtracting** TP1: In order to add related fractions, first convert one fraction so that both share the same denominator (a *'common denominator'*). TP2: To subtract related fractions, first convert one fraction so that both share a common denominator. TP3: The common denominator method can be extended to adding and subtracting non unit related fractions. TP4: To add and subtract *non-related* fractions, the product of the two denominators provides a common denominator. TP5: Converting to common denominators is one of several methods that can be used to compare fractions. I know how to compare fractions whose denominators are multiples of the same number. I know how to order fractions whose denominators are multiples of the same number. I know how to add and subtract fractions with the same denominator or with denominators that are multiples of the same number.	**3.10 Linking fractions, decimals and percentages** TP1: Some fractions are easily converted to decimals. TP2: These fraction–decimal equivalents can be found throughout the number system. TP3: Fraction–decimal equivalence can sometimes be used to simplify calculations. TP4: *'Percent'* means number of parts per hundred. A percentage can be an operator on a quantity, indicating the proportion of a quantity being considered. TP5: Percentages have fraction and decimal equivalents. TP6: If the value of a whole is known, a percentage of that number or amount can be calculated. I know how to apply my knowledge of HCF to find equivalents for the purpose of simplifying. (6F–1) I know how to calculate decimal equivalents for a simple fraction. I know how to recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.

				fraction are the same, the fraction is equivalent to one whole. **Fractions as numbers** TP4: All unit and non-unit fractions are numbers that can be placed on a number line. TP5: Repeated addition of a unit fraction results in a non-unit fraction. TP6: When the numerator and the denominator are the same, the value of the fraction is one. **Comparing fractions** TP7: Non-unit fractions with the same denominator can be compared. If the denominators are the same, then the greater the numerator, the greater the fraction. TP8: Non-unit fractions with the same numerator can be compared. If the numerators are the same, then the greater the denominator, the smaller the fraction. I know how to recognise, name and write non-unit fractions with a denominator under 10 of a length, shape, set of objects or quantity. I know how to find non-unit fractions with denominators under 10 of a length, shape, set of objects or quantity.	quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number. I know how to recognise and write decimal numbers as fractions containing tenths or hundredths.	I know how to add and subtract mixed numbers and improper fractions, whose denominators are multiples of the same number when converted. (4F–3) I know how to write percentages as a decimal fraction Pre teach - I know how to recognise the per cent symbol (%) and understand that per cent relates to “number of parts per hundred”. Pre teach - I know how to write percentages with a denominator 100 as a decimal fraction. Pre teach - I know how to solve problems which require knowing percentage and decimal equivalents of 1 / 2, 1 / 4, 1 / 5, 2 / 5, 4 / 5 and those with a denominator of a multiple of 10 or 25.	I know how to solve problems involving the calculation of percentages and the use of percentages for comparison I know how to solve problems involving unequal sharing and grouping using knowledge of fractions and multiples. (6AS/MD–3) I know how to apply my knowledge of multiplication, division and finding fractions to solve problems that include scaling by simple fractions.

				(3F–1 and 3F–2) **3.4 Adding and subtracting within one whole** TP1: When adding fractions with the same denominators, just add the numerators. TP2: When subtracting fractions with the same denominators, just subtract the numerators. TP3: Addition and subtraction of fractions are the inverse of each other, just as they are for whole numbers. TP4: To subtract from one whole, first convert the whole to a fraction where the denominator and numerator are the same. I know how to add and subtract fractions with the same denominator within one whole. I know how to use diagrams to recognise and find equivalent fractions with denominators under 10.			

Shape Space and Measure (not covered in spines)	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	Shape and Space Developing special awareness: experiencing different viewpoints Developing special vocabulary Representing special relationships Shape awareness: developing shape awareness through construction Identifying similarities between shapes Showing awareness of properties of shapes Describing properties of shape Developing an awareness of relationships between shapes I know how to select, rotate and manipulate shapes to develop special reasoning skills I know how to compose and decompose shapes **Measures** Recognising attributes Comparing amounts of continuous quantities Showing awareness of comparison in estimating and predicting Comparing indirectly	I know how to tell the time to the hour and half past the hour and draw the hands on a clock face to show these times. I am beginning to write the time (hours, minutes, seconds). I know how to describe position. I know how to describe direction and movement, including half, quarter and three-quarter turns. I know how to measure and begin to record mass, capacity and volume. I know how to recognise and use language relating to dates, including days of the week, weeks, months and years. I know how to describe time [e.g., quicker, slower, earlier, later] I know how to sequence events in chronological order using language [e.g., before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening]. I know how to identify common 2D and 3D shapes, including: 2D shapes [e.g., rectangles (including squares), circles and triangles], 3D shapes [e.g., cuboids (including cubes), pyramids and spheres]. (1G–1)	I know how to use mathematical vocabulary to describe position. I know how to use mathematical vocabulary to describe direction and movement in a straight line. I know how to distinguish between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anti-clockwise). I know how to choose and use appropriate standard units to measure capacity (l/ml) to the nearest appropriate unit, using measuring vessels. I know how to compare mass, volume and capacity, recording the results using >, < and =. I know how to order mass, volume and capacity. I know how to estimate capacity (litres/ml) to the nearest appropriate unit. I know how to apply my knowledge of addition and subtraction to solve problems involving capacity, volume and mass. I know how to identify and describe the properties of 2D shapes, including the number of sides and line symmetry in a vertical line. (2G–1)	I know how to measure and record volume and capacity (l/ml). I know how to apply my knowledge of comparing numbers to compare volume and capacity, recording the results using >, < and =. I know how to apply my knowledge of addition and subtraction to add and subtract volume and capacity (l/ml). I know how to recognise that angles are a property of shape or a description of a turn, identify right angles and recognise that two right angles make a half turn, three make three quarters of a turn and four a complete turn. I know how to identify whether angles are greater than or less than a right angle. (3G–1) I know how to identify and describe the properties of 2D shapes including horizontal, vertical, parallel and perpendicular lines. I know how to identify and describe 3D shapes in different orientations. I know how to draw 2-D shapes (3G–2) I know how to make 3-D shapes using modelling materials.	I know how to describe positions on a 2-D grid as coordinates in the first quadrant. I know how to plot specified points and draw sides to complete a given polygon. I know how to describe movements between positions as translations of a given unit to the left/right and up/down. I know how to convert between kilometres and metres. I know how to tell the time on both analogue and digital 12 and 24-hour clocks. I know how to write the time from an analogue and digital 12 and 24-hour clocks. I know how to convert from hours to minutes; minutes to seconds; years to months; weeks to days. I know how to convert time between analogue and digital 12 and 24-hour clocks. I know how to estimate, compare and calculate money in pounds and pence. I know how to identify right angles and recognise how many right-angled turns you need to make between 1 and 2 turns.	I know how to identify and describe the position of a shape. I know how to represent the position of a shape. I know how to estimate the area of irregular shapes. I know how to apply my knowledge of comparing numbers to compare the area of squares and rectangles (cm 2, m 2). (5G–2) I know how to represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed. I know how to convert between kilometres, metres, centimetre and millimetre. I know how to use equivalences between metric units and common imperial units such as inches. I know how to use all four operations to solve problems involving length, using decimal notation including scaling. I know how to convert between litres and millilitres, and grams and kilograms. I know how to use equivalences between metric units and common	I know how to solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate. I know how to solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate. I know how to describe positions on the full coordinate grid (all four quadrants). I know how to draw and translate simple shapes on the coordinate plane and reflect them in the axes. I know how to convert between miles and kilometres. I know how to solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate. I know how to apply my knowledge of 3-D shapes to calculate, volume of cubes and cuboids using standard units, including centimetre cubed (cm 3) and cubic metres (m 3), and extending to other units such as mm and km. I know how to identify angles where they meet at a point, are on a straight

	Recognising the relationship between the size and number of units Beginning to use units to compare things Beginning to use time to sequence events Beginning to experience specific time durations I know how to compare lengths. I know how to compare weight. I know how to compare capacity.	I know how to compose 2-D and 3-D shapes from smaller shapes to match an example, including manipulating shapes to place them in particular orientations. (1G–2)	I know how to identify 2 -D shapes on the surface of 3-D shapes. I know how to identify and describe the properties of 3D shapes, including the number of edges, vertices and faces. I know how to compare and sort common 2-D and 3-D shapes and everyday objects.		I know how to identify and compare acute and obtuse angles. I know how to identify and describe 2D shapes presented in different orientations and recognise horizonal and vertical lines of symmetry. I know how to compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes. (4G–2) I know how to complete a simple symmetric figure with respect to a specific line of symmetry. (4G–3)	imperial units such as pounds and pints. I know how to convert between units of time. I know how to use all four operations to solve problems involving money, using decimal notation including scaling. I know how to identify and describe 2D shapes presented in different orientations and recognise all lines of symmetry. I know how to identify and describe 3D shapes, including cubes and other cuboids, from 2D representations. I know how to distinguish between regular and irregular polygons based on reasoning about equal sides and angles. I know how to draw given angles.	line and are vertically opposite. I know how to apply my knowledge of addition, subtraction and angles to solve missing angle problems. I know how to identify and describe the properties of a circle and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius. I know how to identify and describe 3D shapes in various representations. I know how to compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons. I know how to draw 2-D shapes using given dimensions and angles. (6G–1) I know how to build simple 3-D shapes, including making nets.

Covered in Science	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
			I know how to present data by constructing simple pictograms, tally charts, block diagrams and simple tables.	I know how to present data by constructing bar charts, pictograms and tables.	I know how to present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs.		I know how to present data by constructing pie charts and line graphs.