The Link Academy Trust

Mathematics Curriculum Statement

Our curriculum statements are designed to be used as a supportive tool to plan teaching and learning across our school. The key skills are derived from the National Curriculum and split into individual year groups to support a progressive approach and mixed age classes.

Mathematics at The Link Academy Trust

Our core purpose is to equip all pupils with the skills and confidence to develop their mathematical fluency, problem solving and reasoning in preparation for assessment (including statutory testing), further education and life beyond.

Children are encouraged to develop curiosity about number and embrace the mathematics that surrounds them each day in a variety of contexts that have meaningful connections to real life, including links with other curriculum subjects. We offer opportunities for children to develop understanding and mathematical articulacy through a cohesive progression of learning across the school in order to maximise their depth of learning. Children should be able to demonstrate a deep conceptual understanding of an area of maths and build on this over time, as well as establishing a secure knowledge of key number facts to allow them to become efficient mathematicians.

Mathematics at The Link Academy Trust is an opportunity for pupils to take risks, challenge themselves and work both independently and collaboratively towards solving problems. Children will develop concise and accurate vocabulary in mathematics through consistent modelling by teachers and high expectations for the pupils.

Our learning (resilience, creativity, respect, responsibility) are evident throughout mathematics at Sparkwell School. Alongside this, we promote growth mindset and ensure all children feel empowered to achieve. This supports our children to develop self-confidence when faced with mathematical challenges, allowing them to embrace mistakes as part of the learning process and in turn value the importance of effort.

We strive to accelerate progress and improve outcomes for all of our pupils each year.

As a school, in Autumn 2024 we switched from Maths Shed to White Rose as through this we have support from the Trust Maths lead and we believe it may lead to improving end of KS2 outcomes for our pupils. It delivers mixed age planning which is essential if all our children are to be taught by the class teacher, although there will be times when small groups are supported or have additional challenge with an experienced teaching assistant.

Vocabulary

Children's command of vocabulary is fundamental to learning and progress across the curriculum. Vocabulary is developed actively, building systematically on pupil's current knowledge and deepening their understanding of etymology and morphology (word origins and structures) to increase their store of words. Simultaneously, pupils make links between known and new vocabulary, and discuss and apply shades of meaning. In this way, children expand the vocabulary choices that are available to them. It is essential to introduce technical vocabulary which define each curriculum subject.

Vocabulary development is underpinned by an oracy culture and a tiered approach. High value is placed on the conscious, purposeful selection of well-chosen vocabulary and appropriate sentence structure to enrich access to learning and feed into written work across the curriculum.

Maths specific vocabulary	**Planning**	**Lesson structure and class management**	**Working walls and resources**
Rich maths vocabulary is modelled and discussed by class teachers and pupils. The expectations are high for children to consistently use accurate, concise and age-appropriate mathematical vocabulary during discussions and written reasoning. By the time Year 6 pupils undertake SATs, children should have a clear understanding of KS1 and KS2 maths vocabulary to eliminate potential barriers to understanding questions. Teachers use regular questioning and activities around maths vocabulary to address misconceptions and dual meanings. The focus on 'maths talk' is evident with talk partners, talk trios or whole-class discussions in response to frequent effective questioning throughout all maths lessons. By giving the children these opportunities to expand on their thinking and share their reasoning, they will develop their conceptual understanding and make connections between number facts.	Maths mastery is a core driver of our teaching and learning. This resource is complemented by fluency, problem-solving and reasoning tasks adapted from a variety of other sources. Lessons planned in all year groups will consider a Concrete-Pictorial-Abstract (CPA) approach to engage and add depth of understanding for all learners. The planning ensures that all learners are challenged at an appropriate level and support is allocated accordingly. Depending on class structure, as mixed-age classes dictate, some year groups may receive separate lesson inputs by the Teacher and/or HLTA and some will share lesson inputs, but all will have adaptive teaching incorporated into each lesson. Medium-term White Rose planning maps out curriculum coverage.	The focus on 'maths talk' is evident with talk partners, talk trios or whole-class discussions in response to frequent questioning throughout all maths lessons. Teachers will challenge understanding through regular, investigative questioning throughout, for example: How do you know? Can you prove it? Are you sure? What's the value? What's the same/different about? Can you explain that? What does your partner think? Can you show me another way? Maths pairs and trios are selected each week so children work with a range of other learners. The main body of the lesson will include various models, images, resources and representations of mathematical learning and opportunities to develop fluency, problem-solving and reasoning Retrieval practice is built into a pupil's daily diet at least 3 days a week. This is to draw on and practice previously learnt skills, knowledge or understanding. There are a number of approaches to this and these are down to teacher discretion.	Each class has a mathematics space to display sentence stems, key models and diagrams to support learning in mathematics. It is a public display of the learning process which evolves as each day progresses to support children's independent work. Individual rooms are resources with a range of resources to support learning (bead strings, tens frames, dienes, counters, cubes etc). Children know where maths resources are kept and are encouraged to independently use them to assist their own learning. A range of maths scaffolding resources are used by individuals identified as requiring them.

AFL, Self-editing & feedback At Sparkwell we use the White Rose scheme of work to teach children with a mastery approach. For each learning point, slides and activities are selected by the teacher based on ongoing assessment. In each lesson, children are taught and given opportunities to practice fluency around a concept and develop associated reasoning and problem-solving skills. In order for children to fully master a concept, teacher judgment is used to select and provide suitable additional practice, consolidation or enrichment activities. Children may be extended through additional explanation, writing their own problems, finding another way, applying the concept to a new area of maths. KS2 pupils may mark their work together to provide opportunities to discuss understanding and instant feedback to assist in gauging understanding.	**Times tables and number facts** Regular, short times-tables and other numbers fact activities take place in each class either during or before a maths lesson. Children are assessed against a number fact passport from EYFS to Y6. These individual assessments are used to help set targets for pupils; copies are sent home for guidance, and time in class is allocated for practice and assessments. These number fact passports will be updated at least termly. In year 4, pupils work toward their MTC through access to practice tests and target setting.	**SEND, pre-teaching and mop-up maths** Some individuals are specifically supported by additional adults, resources or differentiated activities in maths. Learners who have not kept up with the rest of the class during the lesson will have additional input planned for either before the next lesson or during, appropriate. If a teacher anticipates that an individual might struggle to engage with the day's learning, there may be a short pre-teaching session prior to the maths lesson. Intervention for pupils working significantly below age-related expectations is detailed in Class Provision Maps.	**Calculation policy** The calculation policy (see separate document) is a guide for teaching the progression of calculation strategies throughout primary education. Sparkwell does not consider any strategy to be specific for use only in particular year groups. An example of this is pupils using basic number lines in Year 6 to solve negative number problems or the basic use of visual and concrete representations of numbers across all year groups.

In order to assess impact - a guide

Children will develop 'maths capital' - confidence, understanding and enjoyment in mathematics along with a comprehensive set of problem-solving skills and strategies to take with them to the next stage of their education. They will be engaged, resilient, challenged and able to quickly recall facts and techniques in order to maximise their depth of learning.

They will use mathematics effectively as a tool in a wide variety of situations and will be able to present a justification or argument relating to a problem using mathematical language. They will understand the relevance of what they are learning in relation to real world concepts and develop a sense of curiosity about the subject.

Our children will develop confident recall of multiplication tables to 12x12 by the end of year 4 and our attainment data will exceed national.

Assessment evidence - a guide

EYFS	KS1	Years 3-5	Year 6
White Rose checkpoints per unit.	Statutory tests for Year 2 (SATs).	Statutory Multiplication Check for Year 4.	Statutory tests for Year 6 (SATs)
Early Learning Goals.	PUMA assessments	PUMA assessments	Mocks SATs tests through the year
Daily maths check-in with individuals.	Scholar pack – in-house data and progress tracking.	Scholar pack – in-house data and progress tracking.	Scholar pack – in-house data and progress tracking.
Scholar pack – in-house data and progress tracking.	Teacher assessment - observations of maths behaviour and discussion.	Teacher assessment - observations of maths behaviour and discussion.	Teacher assessment - observations of maths behaviour and discussion
Continuous provision linked to maths each day and monitored by teacher.	Maths books evidence.	Maths books evidence.	Maths books evidence
Maths books and photographic evidence – see Tapestry.	Number fact passports	Number fact passports	Number fact passports
Baseline assessment.			

Progressive Curriculum Plan

Number and Place Value/ Counting

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Count confidently, developing a deep understanding of the numbers to 10.	count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number			count backwards through zero to include negative numbers	interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero	use negative numbers in context, and calculate intervals across zero
Verbally count beyond 20, recognising the pattern of the counting system.	count, read and write numbers to 100 in numerals; count in multiples of twos, fives and tens	count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or backward	count from 0 in multiples of 4, 8, 50 and 100;	count in multiples of 6, 7, 9, 25 and 1 000	count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000	
Understand the 'one more than/one less than' relationship between consecutive numbers.	given a number, identify one more and one less		find 10 or 100 more or less than a given number	find 1 000 more or less than a given number		
Count objects, actions and sounds.						

Comparing Numbers

Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity.	use the language of: equal to, more than, less than (fewer), most, least	compare and order numbers from 0 up to 100; use <, > and = signs	compare and order numbers up to 1 000	order and compare numbers beyond 1 000	read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit *(appears also in Reading and Writing Numbers)*	read, write, order and compare numbers up to 10 000 000 and determine the value of each digit (appears also in Reading and Writing Numbers)
Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally. Spot connections.				*compare numbers with the same number of decimal places up to two decimal places (copied from Fractions)*		

Identifying, representing and estimating numbers

Subitise (recognise quantities without counting) up to 5.	identify and represent numbers using objects and pictorial representations including the number line	identify, represent and estimate numbers using different representations, including the number line	identify, represent and estimate numbers using different representations	identify, represent and estimate numbers using different representations		
Link the number symbol (numeral) with its cardinal						

number value.						
Reading and writing numbers (including Roman Numerals)						
Have a deep understanding of numbers to 10, including the composition of each number.	read and write numbers from 1 to 20 in numerals and words.	read and write numbers to at least 100 in numerals and in words	read and write numbers up to 1 000 in numerals and in words *tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks (copied from Measurement)*	read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of zero and place value.	read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit *(appears also in Comparing Numbers)* read Roman numerals to 1 000 (M) and recognise years written in Roman numerals.	read, write, order and compare numbers up to 10 000 000 and determine the value of each digit *(appears also in Understanding Place Value)*
Understanding place value						
		recognise the place value of each digit in a two-digit number (tens, ones)	recognise the place value of each digit in a three-digit number (hundreds, tens, ones)	recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones) *find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as units, tenths and hundredths (copied from Fractions)*	read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit *(appears also in Reading and Writing Numbers)* *recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents (copied from Fractions)*	read, write, order and compare numbers up to 10 000 000 and determine the value of each digit *(appears also in Reading and Writing Numbers)* *identify the value of each digit to three decimal places and multiply and divide numbers by 10, 100 and 1 000 where the answers are up to three decimal places (copied from Fractions)*
Rounding						
				round any number to the nearest 10, 100 or 1 000	round any number up to 1 000 000 to the nearest 10, 100, 1 000, 10 000 and 100 000	round any whole number to a required degree of accuracy
				round decimals with one decimal place to the nearest whole number (copied from Fractions)	*round decimals with two decimal places to the nearest whole number and to one decimal place (copied from Fractions)*	*solve problems which require answers to be rounded to specified degrees of accuracy (copied from Fractions)*
Problem Solving						

		use place value and number facts to solve problems	solve number problems and practical problems involving these ideas.	solve number and practical problems that involve all of the above and with increasingly large positive numbers	solve number problems and practical problems that involve all of the above	solve number and practical problems that involve all of the above

Addition and Subtraction

Number bonds

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts.	represent and use number bonds and related subtraction facts within 20	recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100				

Addition and subtraction
Mental Calculation

	add and subtract one-digit and two-digit numbers to 20, including zero	add and subtract numbers using concrete objects, pictorial representations, and mentally, including: * a two-digit number and ones * a two-digit number and tens * two two-digit numbers * adding three one-digit numbers	add and subtract numbers mentally, including: * a three-digit number and ones * a three-digit number and tens * a three-digit number and hundreds		add and subtract numbers mentally with increasingly large numbers	perform mental calculations, including with mixed operations and large numbers
	read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs *(appears also in Written Methods)*	show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot				use their knowledge of the order of operations to carry out calculations involving the four operations

Written Methos

	read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs *(appears also in Mental Calculation)*		add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction	add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate	add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)	
Inverse operations, estimating and checking answers						
		recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.	estimate the answer to a calculation and use inverse operations to check answers	estimate and use inverse operations to check answers to a calculation	use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy	use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy.
Problem Solving						
	solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = * - 9	solve problems with addition and subtraction: * using concrete objects and pictorial representations, including those involving numbers, quantities and measures * applying their increasing knowledge of mental and written methods	solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction	solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why	solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why	solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why Solve problems involving addition, subtraction, multiplication and division

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	count in multiples of twos, fives and tens (copied from Number and Place Value)	*count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or backward (copied from Number and Place Value)*	*count from 0 in multiples of 4, 8, 50 and 100 (copied from Number and Place Value)*	*count in multiples of 6, 7, 9, 25 and 1 000 (copied from Number and Place Value)*	*count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000 (copied from Number and Place Value)*	

		recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers	recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables	recall multiplication and division facts for multiplication tables up to 12 × 12		
			write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods *(appears also in Written Methods)*	use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers	multiply and divide numbers mentally drawing upon known facts	perform mental calculations, including with mixed operations and large numbers
		show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot		recognise and use factor pairs and commutativity in mental calculations *(appears also in Properties of Numbers)*	multiply and divide whole numbers and those involving decimals by 10, 100 and 1000	*associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. $^3/_8$) (copied from Fractions)*
		calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs	write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods *(appears also in Mental Methods)*	multiply two-digit and three-digit numbers by a one-digit number using formal written layout	multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers	multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication

					divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context	divide numbers up to 4-digits by a two-digit whole number using the formal written method of short division where appropriate for the context divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context
						use written division methods in cases where the answer has up to two decimal places (copied from Fractions)
				recognise and use factor pairs and commutativity in mental calculations (repeated)	identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers.	identify common factors, common multiples and prime numbers
					know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers	*use common factors to simplify fractions; use common multiples to express fractions in the same denomination (copied from Fractions)*
					establish whether a number up to 100 is prime and recall prime numbers up to 19	
					recognise and use square numbers and cube numbers, and the notation for squared (^{2}) and cubed (^{3})	*calculate, estimate and compare 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^3 and km^3 (copied from Measures)*

						use their knowledge of the order of operations to carry out calculations involving the four operations
			estimate the answer to a calculation and use inverse operations to check answers (copied from Addition and Subtraction)	*estimate and use inverse operations to check answers to a calculation (copied from Addition and Subtraction)*		use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy
	solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher	solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts	solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects	solve problems involving multiplying and adding, including using the distributive law to multiply two-digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects	solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes	solve problems involving addition, subtraction, multiplication and division
					solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign	
					solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates	*solve problems involving similar shapes where the scale factor is known or can be found (copied from Ratio and Proportion)*

EYFS	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**

		Pupils should count in fractions up to 10, starting from any number and using the1/2 and 2/4 equivalence on the number line (Non Statutory Guidance)	count up and down in tenths	count up and down in hundredths		
	recognise, find and name a half as one of two equal parts of an object, shape or quantity	recognise, find, name and write fractions $^1/_3$, $^1/_4$, $^2/_4$ and $^3/_4$ of a length, shape, set of objects or quantity	recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators	recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten	recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents *(appears also in Equivalence)*	

			recognise that tenths arise from dividing an object into 10 equal parts and in dividing one – digit numbers or quantities by 10.			
	recognise, find and name a quarter as one of four equal parts of an object, shape or quantity		recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators			
			compare and order unit fractions, and fractions with the same denominators		compare and order fractions whose denominators are all multiples of the same number	compare and order fractions, including fractions >1
				compare numbers with the same number of decimal places up to two decimal places	read, write, order and compare numbers with up to three decimal places	identify the value of each digit in numbers given to three decimal places
				round decimals with one decimal place to the nearest whole number	round decimals with two decimal places to the nearest whole number and to one decimal place	solve problems which require answers to be rounded to specified degrees of accuracy

		write simple fractions e.g. $^1/_2$ of 6 = 3 and recognise the equivalence of $^2/_4$ and $^1/_2$.	recognise and show, using diagrams, equivalent fractions with small denominators	recognise and show, using diagrams, families of common equivalent fractions	identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths	use common factors to simplify fractions; use common multiples to express fractions in the same denomination
				recognise and write decimal equivalents of any number of tenths or hundredths	read and write decimal numbers as fractions (e.g. 0.71 = $^{71}/_{100}$) recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents	associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. $^3/_8$)
				recognise and write decimal equivalents to $^1/_4$; $^1/_2$; $^3/_4$	recognise the per cent symbol (%) and understand that per cent relates to "number of parts per hundred", and write percentages as a fraction with denominator 100 as a decimal fraction	recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.

			add and subtract fractions with the same denominator within one whole (e.g. $^5/_7 + ^1/_7 = ^6/_7$)	add and subtract fractions with the same denominator	add and subtract fractions with the same denominator and multiples of the same number recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number (e.g. $^2/_5 + ^4/_5 = ^6/_5 = 1^1/_5$)	add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions
					multiply proper fractions and mixed numbers by	multiply simple pairs of proper fractions, writing the answer in its simplest

					whole numbers, supported by materials and diagrams	form (e.g. $^1/_4 \times {}^1/_2 = {}^1/_8$)
						multiply one-digit numbers with up to two decimal places by whole numbers
						divide proper fractions by whole numbers (e.g. $^1/_3 \div 2 = {}^1/_6$)
						multiply one-digit numbers with up to two decimal places by whole numbers
				find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths		multiply and divide numbers by 10, 100 and 1000 where the answers are up to three decimal places
						identify the value of each digit to three decimal places and multiply and divide numbers by 10, 100 and 1000 where the answers are up to three decimal places
						associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. $^3/_8$)
						use written division methods in cases where the answer has up to two decimal places

			solve problems that involve all of the above	solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number	solve problems involving numbers up to three decimal places	
				solve simple measure and money problems involving fractions and decimals to two decimal places.	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.	

Ratio and proportion					
					Year 6
					solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts
					solve problems involving the calculation of percentages [for example 15% of 360] and the use of percentages for comparison
					solve problems involving similar shapes where the scale factor is known or can be found
					solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.

EYFS	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**

	*solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = * - 9 (copied from Addition and Subtraction)*	*recognise and use the inverse relationship between addition and subtraction and use this to check calculations and missing number problems. (copied from Addition and Subtraction)*	*solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction. (copied from Addition and Subtraction)* *solve problems, including missing number problems, involving multiplication and division, including integer scaling (copied from Multiplication and Division)*		*use the properties of rectangles to deduce related facts and find missing lengths and angles (copied from Geometry: Properties of Shapes)*	express missing number problems algebraically
		recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100 (copied from Addition and Subtraction)				find pairs of numbers that satisfy number sentences involving two unknowns
	represent and use number bonds and related subtraction facts within 20 (copied from Addition and Subtraction)					enumerate all possibilities of combinations of two variables
				Perimeter can be expressed algebraically as 2(a + b) where a and b are the dimensions in the same unit. (Copied from NSG measurement)		use simple formulae *recognise when it is possible to use formulae for area and volume of shapes (copied from Measurement)*
Sequences						
Continue, copy and create repeating patterns.	*sequence events in chronological order using language such as: before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening (copied from Measurement)*	*compare and sequence intervals of time (copied from Measurement)* *order and arrange combinations of mathematical objects in patterns (copied from Geometry: position and direction)*				generate and describe linear number sequences

Measurement
Comparing and estimating

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Compare length, weight and capacity.	compare, describe and solve practical problems for: * lengths and heights [e.g. long/short, longer/shorter, tall/short, double/half] * 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] * time [e.g. quicker, slower, earlier, later]	compare and order lengths, mass, volume/capacity and record the results using >, < and =		estimate, compare and calculate different measures, including money in pounds and pence *(also included in Measuring)*	calculate and compare the area of squares and rectangles including using standard units, square centimetres (cm^2) and square metres (m^2) and estimate the area of irregular shapes (also included in measuring) estimate volume (e.g. using 1 cm^3 blocks to build cubes and cuboids) and capacity (e.g. using water)	calculate, estimate and compare 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^3 and km^3.
	sequence events in chronological order using language [e.g. before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening]	compare and sequence intervals of time	compare durations of events, for example to calculate the time taken by particular events or tasks			
			estimate and read 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 *(appears also in Telling the Time)*			

	measure and begin to record the following: * lengths and heights * mass/weight * capacity and volume * time (hours, minutes, seconds)	choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels	measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml)	estimate, compare and calculate different measures, including money in pounds and pence *(appears also in Comparing)*	use all four operations to solve problems involving measure (e.g. length, mass, volume, money) using decimal notation including scaling.	solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate *(appears also in Converting)*
			measure the perimeter of simple 2-D shapes	measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres	measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres	recognise that shapes with the same areas can have different perimeters and vice versa

	recognise and know the value of different denominations of coins and notes	recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value find different combinations of coins that equal the same amounts of money solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change	add and subtract amounts of money to give change, using both £ and p in practical contexts			
				find the area of rectilinear shapes by counting squares	calculate and compare the area of squares and rectangles including using standard units, square centimetres (cm^2) and square metres (m^2) and estimate the area of irregular shapes *recognise and use square numbers and cube*	calculate the area of parallelograms and triangles calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm^3) and cubic metres (m^3), and extending to other units [e.g. mm^3 and km^3].

					numbers, and the notation for squared (^{2}) and cubed (^{3}) (copied from Multiplication and Division)	recognise when it is possible to use formulae for area and volume of shapes
	tell the time to the hour and half past the hour and draw the hands on a clock face to show these times.	tell and write the time to five minutes, including quarter past/to the hour and draw the hands on a clock face to show these times.	tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks	read, write and convert time between analogue and digital 12 and 24-hour clocks *(appears also in Converting)*		
	recognise and use language relating to dates, including days of the week, weeks, months and years	know the number of minutes in an hour and the number of hours in a day. *(appears also in Converting)*	estimate and read 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 *(appears also in Comparing and Estimating)*			
				solve problems involving converting from hours to minutes; minutes to seconds;	solve problems involving converting between units of time	

				years to months; weeks to days *(appears also in Converting)*		
		know the number of minutes in an hour and the number of hours in a day. *(appears also in Telling the Time)*	know the number of seconds in a minute and the number of days in each month, year and leap year	convert between different units of measure (e.g. kilometre to metre; hour to minute)	convert between different units of metric measure (e.g. kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre)	use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to three decimal places

				read, write and convert time between analogue and digital 12 and 24-hour clocks *(appears also in Converting)*	solve problems involving converting between units of time	solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate *(appears also in Measuring and Calculating)*
				solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days *(appears also in Telling the Time)*	understand and use equivalences between metric units and common imperial units such as inches, pounds and pints	convert between miles and kilometres

Identifying shapes and their properties

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Develop spatial reasoning skills across all areas of mathematics including shape, space and measures.	Recognise and name common 2-D and 3-D shapes, including: * 2-D shapes [e.g. rectangles (including squares), circles and triangles] * 3-D shapes [e.g. cuboids (including cubes), pyramids and spheres].	identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces identify 2-D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid]		identify lines of symmetry in 2-D shapes presented in different orientations	identify 3-D shapes, including cubes and other cuboids, from 2-D representations	recognise, describe and build simple 3-D shapes, including making nets *(appears also in Drawing and Constructing)* illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius
Compose and decompose shapes so that children			draw 2-D shapes and make 3-D shapes using	complete a simple symmetric figure with	draw given angles, and measure them in degrees	draw 2-D shapes using given dimensions and angles

recognise a shape can have other shapes within it, just as numbers can.			modelling materials; recognise 3-D shapes in different orientations and describe them	respect to a specific line of symmetry	(°)	recognise, describe and build simple 3-D shapes, including making nets *(appears also in Identifying Shapes and Their Properties)*
Select, rotate and manipulate shapes to develop spatial reasoning skills.		compare and sort common 2-D and 3-D shapes and everyday objects		compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes	use the properties of rectangles to deduce related facts and find missing lengths and angles distinguish between regular and irregular polygons based on reasoning about equal sides and angles	compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons
			recognise angles as a property of shape or a description of a turn		know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles	
			identify right angles, recognise that two right angles make a half-turn, three make three quarters of a turn and four a complete turn; identify whether angles are greater than or less than a right angle	identify acute and obtuse angles and compare and order angles up to two right angles by size	identify: * angles at a point and one whole turn (total 360°) * angles at a point on a straight line and ½ a turn (total 180°) other multiples of 90°	recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles
			identify horizontal and vertical lines and pairs of perpendicular and parallel lines			

EYFS	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**

Consolidate 2-4 year old milestones	describe position, direction and movement, including half, quarter and three-quarter turns.	use mathematical vocabulary to describe position, direction and movement including movement in a straight line and distinguishing between rotation		describe positions on a 2-D grid as coordinates in the first quadrant	identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and	describe positions on the full coordinate grid (all four quadrants)
		as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anti-clockwise)		describe movements between positions as translations of a given unit to the left/right and up/down	know that the shape has not changed	draw and translate simple shapes on the coordinate plane, and reflect them in the axes.
				plot specified points and draw sides to complete a given polygon		
		order and arrange combinations of mathematical objects in patterns and sequences				

Interpreting, constructing and presenting data						
EYFS	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
		interpret and construct simple pictograms, tally charts, block diagrams and simple tables	interpret and present data using bar charts, pictograms and tables	interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs	complete, read and interpret information in tables, including timetables	interpret and construct pie charts and line graphs and use these to solve problems
		ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity				
		ask and answer questions about totalling and comparing categorical data				

			solve one-step and two-step questions [e.g. 'How many more?' and 'How many fewer?'] using information presented in scaled bar charts and pictograms and tables.	solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs.	solve comparison, sum and difference problems using information presented in a line graph	calculate and interpret the mean as an average