Newton Tony Primary School CE VC

Maths knowledge and skills progression

National curriculum

EYFS Development matters

Maths

Count objects, actions and sounds.
Subitise.
Link the number symbol (numeral) with its cardinal number value.
Count beyond ten.
Compare numbers.
Understand the 'one more than/one less than' relationship between consecutive numbers.
Explore the composition of numbers to 10.
Automatically recall number bonds for numbers 0–10.
Select, rotate and manipulate shapes in order to develop spatial reasoning skills.
Compose and decompose shapes so that children recognise a shape can have other shapes within it, just as numbers can.
Continue, copy and create repeating patterns.
Compare length, weight and capacity.

KS1 and KS2 National Curriculum 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.

Further detail about the content of the National Curriculum for Maths including the breakdown of content for each year group can be found here: National Curriculum document

Theme	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	Place value						
Counting	Count objects, actions and sounds Count beyond ten	Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number 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 and backward	Count from 0 in multiples of 4, 8, 50 and 100	Count in multiples of 6, 7, 9, 25 and 1000 Count backwards through zero to include negative numbers	Count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000	
Recognising	Subitise (recognise quantities without counting)	*Conceptual Prerequisites:* *Know that 10 ones are equivalent to 1 ten.* *Know that multiples of 10 are made up from a number of tens, for example, 50 is 5 tens.*	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)	Read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit	Read, write, order and compare numbers up to 10 000 000 and determine the value of each digit

More and less	Understand the 'one more than/one less than' relationship between consecutive numbers.	Given a number, identify one more and one less	Find 10 more or less than a number	Find 100 more or less than a given number	find 1000 more or less than a given number		
Comparing and ordering	Compare numbers	*Conceptual Prerequisites:* *Place the numbers 1 to 9 on a marked, but unlabelled, 0 to 10 number line.* *Estimate the position of the numbers 1 to 9 on an unmarked 0 to 10 number line.* *Count forwards and backwards to and from 100*	Compare and order numbers from 0 up to 100; use and = signs	Compare and order numbers up to 1000	Order and compare numbers beyond 1000	Read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit	Read, write, order and compare numbers up to 10 000 000 and determine the value of each digit
Identify and represent	Explore the composition of numbers to 10.	Identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal to, more than, less than (fewer), most, least	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		
Read and write numbers	Link the number symbol (numeral) with its cardinal number value	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 1000 in numerals and in words	*Conceptual Prerequisite:* *Recognise the place value of each digit in four-digit numbers, and compose and decompose four-digit numbers using standard and non-standard partitioning.*	Read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit	Read, write, order and compare numbers up to 10 000 000 and determine the value of each digit

Solve problems			Use place value and number facts to solve problems.	*Conceptual Prerequisite: solve number and practical problems that involve all of the above*	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
Rounding					Round any number to the nearest 10, 100 or 1000	Round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000	Round any whole number to a required degree of accuracy
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
Roman numerals					Read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of zero and place value	Read Roman numerals to 1000 (M) and recognise years written in Roman numerals	

Theme	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	Addition and subtraction						
Recall and mental calculations	Automatically recall number bonds for numbers 0–10 Methods: Combine two parts to make a whole by using a range of practical resources/ physically take away and remove objects from a whole. Lead onto drawing the part part whole model. Number lines. Tens frames.	Read, write and interpret mathematical statements involving addition (+), subtraction (–) and equals (=) signs 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 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 - three-digit number and hundreds	*Conceptual Prerequisite: Apply place-value knowledge to known additive number facts (scaling facts by 10 or 100) e.g.* *8+6 = 14* *80+60 = 140* *800+600=1400*	Add and subtract numbers mentally with increasingly large numbers	Perform mental calculations, including with mixed operations and large numbers

Written calculations		Add and subtract one-digit and two-digit numbers to 20, including zero <u>Methods:</u> Use dienes. Number lines. Use number bonds to partition numbers/ subtract.	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 Show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems. <u>Methods:</u> Dienes. Partition numbers. Expanded written method to add 2 two digit numbers.	Add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction <u>Methods:</u> Children use place value counters to add and subtract 3 digit numbers. Compact method to add/subtract 3 digit numbers.	Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate <u>Methods:</u> Use the compact method to add/subtract 4 digit numbers.	Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction) <u>Methods:</u> Use the compact method to add/subtract increasingly larger numbers.	Use their knowledge of the order of operations to carry out calculations involving the four operations <u>Methods:</u> Use the compact method to add/subtract increasingly larger numbers.

Solving problems		Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems Methods: Use dienes. Number lines. Use number bonds to partition numbers/subtract.	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 Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems. Methods: Dienes. Partition numbers. Expanded written method to add 2 two digit numbers	Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction. Methods: Children use place value counters to add and subtract 3 digit numbers. Compact method to add/subtract 3 digit numbers.	Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why Methods: Use the compact method to add/subtract 4 digit numbers.	Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why Methods: Use the compact method to add/subtract increasingly larger numbers.	Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why Solve problems involving addition & subtraction Methods: Use the compact method to add/subtract increasingly larger numbers.
Estimation, inverse operation and			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, an appropriate degree of accuracy

Theme	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	Multiplication and division						
Mental calculations			Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs	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 Recognise and use factor pairs and commutativity in mental calculations 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
Multiples, factors, prime numbers, square and cubes					Recognise and use factor pairs and commutativity in mental calculations	Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers Know and use the vocabulary of prime numbers, prime factors and composite (nonprime) numbers establish whether a number up to 100 is prime and recall prime numbers up to 19 Recognise and use square numbers and cube numbers, and the notation for squared (2) and cubed (3)	Identify common factors, common multiples and prime numbers

Written calculations			Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot Methods: Use resources to do repeated grouping/repeated addition Children use and draw a number line to show repeated addition. Draw arrays.	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 Methods: Use/draw place value counters Expanded method for multiplication. Written bus stop method.	Multiply two-digit and three-digit numbers by a one-digit number using formal written layout Methods: Expanded method for multiplication. Written bus stop method.	Multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers Divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000 Methods: Place value counters Use the expanded column method for multiplying double digits, moving onto the compact method. Bus stop method for division.	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 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 Divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context Use their knowledge of the order of operations to carry out calculations involving the four operations Methods: Compact method for multiplication. Divide using the written bus stop method and use repeated addition when the divisor is 2 digits.

Solving problems		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. Methods: Children use practical resources to do repeated grouping/ repeated addition/ sharing. Children use a number line to show repeated addition/ subtraction. Arrays.	Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts. Methods: Use resources to do repeated grouping/ repeated addition Children use and draw a number line to show repeated addition. Draw arrays.	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. Methods: Use/draw place value counters Expanded method for multiplication. Written bus stop method.	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. Methods: Expanded method for multiplication. Written bus stop method.	Solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes Solve problems involving multiplication and division and a combination of the four operations, including understanding the meaning of the equals sign Solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates. Methods: Place value counters Use the expanded column method for multiplying double digits, moving onto the compact method. Bus stop method for division.	Solve problems involving multiplication and division Methods: Compact method for multiplication. Divide using the written bus stop method and use repeated addition when the divisor is 2 digits.
Estimation, inverse operation and checking answers				Estimate the answer to a calculation and use inverse operations to check answers	Estimate and use inverse operations to check answers to a calculation	*Conceptual Prerequisite:* *Continue to estimate and use inverse operations to check answers to a calculation*	Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.

Theme	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	Fractions						
Recognise and write		Recognise, find and name a half as 1 of 2 equal parts of an object, shape or quantity Recognise, find and name a quarter as 1 of 4 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 Write simple fractions, for example 1/2 of 6 = 3 and recognise the equivalence of 2/4 and 1/2	Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators Recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators Recognise 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 Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number [for example, 2/5 + 4/5 = 6/5 = 1 1/5]	
Count				Count up and down in tenths Recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10	Count up and down in hundredths Recognise that hundredths arise when dividing an object by 100 and dividing tenths by 10		
Compare, order and simplify				Compare and order unit fractions, and fractions with the same denominators	*Conceptual Prerequisite: Reason about the location of fractions (including mixed numbers if applicable) in the linear number system.*	Compare and order fractions whose denominators are all multiples of the same number	Use common factors to simplify fractions; use common multiples to express fractions in the same denomination Compare and order fractions, including fractions >1

Calculate with fractions				Add and subtract fractions with the same denominator within one whole [for example, 5/7 + 1/7 = 6/7]	Add and subtract fractions with the same denominator	Add and subtract fractions with the same denominator, and denominators that are multiples of the same number Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams	Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions Multiply simple pairs of proper fractions, writing the answer in its simplest form [for example, 1/4 × 1/2 = 1/8] Divide proper fractions by whole numbers [for example, 1/3 ÷ 2 = 1/6]
Solve problems				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		

Theme	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	Decimals						
Recognise and write					Recognise and write decimal equivalents of any number of tenths or hundreds Recognise and write decimal equivalents to $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$	Read and write decimal numbers as fractions [for example, 0.71 = 71/100] Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents	Identify the value of each digit in numbers given to 3 decimal places
Compare and order					Compare numbers with the same number of decimal places up to 2 decimal places	Read, write, order and compare numbers with up to 3 decimal places	

Rounding					Round decimals with 1 decimal place to the nearest whole number	Round decimals with 2 decimal places to the nearest whole number and to 1 decimal place	Solve problems which require answers to be rounded to specified degrees of accuracy
Calculate with decimals					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	*Conceptual Prerequisite:* *Multiply and divide numbers by 10 and 100; understand this as equivalent to making a number 10 or 100 times the size, or 1 tenth or 1 hundredth times the size.*	Multiply and divide numbers by 10, 100 and 1,000 giving answers up to 3 decimal places Multiply one-digit numbers with up to 2 decimal places by whole numbers Use written division methods in cases where the answer has up to 2 decimal places
Solve problems					Solve simple measure and money problems involving fractions and decimals to 2 decimal places	Solve problems involving number up to 3 decimal places	Solve problems which require answers to be rounded to specified degrees of accuracy
Fraction, decimal and percentage equivalence						Recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per 100', and write percentages as a fraction with denominator 100, and as a decimal fraction Solve problems which require knowing percentage and decimal equivalents of 1/2 , 1/4 , 1/5 , 2/5 , 4/5 and those fractions with a denominator of a multiple of 10 or 25	Associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example, 3/8] Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts

Theme	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	Ratio and proportion						
Ratio and proportion							Solve problems involving the relative sizes of 2 quantities where missing values can be found by using integer multiplication and division facts Solve problems involving the calculation of percentages [for example, of measures and such as 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

Theme	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	Algebra (including missing number sentences for early algebraic thinking)						
Algebra	Continue, copy and create repeating patterns.	Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = ? – 9	Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems	Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction			Use simple formulae Generate and describe linear number sequences Express missing number problems algebraically Find pairs of numbers that satisfy an equation with 2 unknowns Enumerate possibilities of combinations of 2 variables

Theme	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	Measurement						
Using measures	Compare length, weight and capacity	Compare, describe and solve practical problems for: • lengths and heights [for example, long/short, longer/shorter, tall/short, double/half] • mass/weight [for example, heavy/light, heavier than, lighter than] • capacity and volume [for example, full/empty, more than, less than, half, half full, quarter] Measure and begin to record the following: • lengths and heights • mass/weight • capacity and volume	Choose and use appropriate standard units to estimate and measure to the nearest appropriate unit, using rulers, thermometers, scales and measuring vessels • length/height in any direction (m/cm) • mass (kg/g) • temperature (°C) • capacity (litres/ml), Compare and order lengths, mass, volume/capacity and record the results using >, < and = Solve simple measure problems in a practical context	Measure, compare, add and subtract: • lengths (m/cm/mm) • mass (kg/g) • volume/capacity (l/ml)	Convert between different units of measure [for example, kilometre to metre; hour to minute] Estimate, compare and calculate different measures	Convert between different units of metric measure [for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre] Understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints Use all four operations to solve problems involving measure using decimal notation, including scaling	Solve problems involving the calculation and conversion of units of measure, using decimal notation up to 3 decimal places where appropriate Use, read, write and convert between standard units, converting measurements of length and mass from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to 3 decimal places Convert between miles and kilometres

Money		Recognise and know the value of different denominations of coins and notes	Recognise and use symbols for pounds (£) and pence (p) Combine amounts to make a particular value Find different combinations of coins that equal the same amounts of money 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	Estimate, compare and calculate different measures, including money in pounds and pence	Use all four operations to solve problems involving measure [for example money].	

Perimeter, area and volume				Measure the perimeter of simple 2-D shapes	Measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres Find the area of rectilinear shapes by counting squares	Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres Calculate and compare the area of rectangles (including squares), including using standard units, square centimetres (cm^2) and square metres (m^2), and estimate the area of irregular shapes Estimate volume [for example, using 1 cm^3 blocks to build cuboids (including cubes)] and capacity [for example, using water] Use all four operations to solve problems involving measure [for example volume] using decimal notation, including scaling	Use, read, write and convert between standard units, converting measurements of volume from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to 3 decimal places Recognise that shapes with the same areas can have different perimeters and vice versa Recognise when it is possible to use formulae for area and volume of shapes 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 [for example, mm^3 and km^3]

Time		Compare, describe and solve practical problems for time [for example, quicker, slower, earlier, later] Measure and begin to record time (hours, minutes, seconds) Sequence events in chronological order using language [for example, before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening] Recognise and use language relating to dates, including days of the week, weeks, months and years Tell the time to the hour and half past the hour and draw the hands on a clock face to show these times	Compare and sequence intervals of time 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 Know the number of minutes in an hour and the number of hours in a day Solve simple problems involving time in a practical context	Tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks Estimate and read time with increasing accuracy to the nearest minute; Record and compare time in terms of seconds, minutes and hours; Use vocabulary such as o'clock, am/pm, morning, afternoon, noon and midnight Know the number of seconds in a minute and the number of days in each month, year and leap year Compare durations of events [for example, to calculate the time taken by particular events or tasks]	Read, write and convert time between analogue and digital 12- and 24-hour clocks Solve problems involving converting from hours to minutes, minutes to seconds, years to months, weeks to days	Solve problems involving converting between units of time	Use, read, write and convert between standard units, converting measurements of time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to 3 decimal places

Theme	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	Geometry						
2D shapes	Select, rotate and manipulate shapes in order to develop spatial reasoning skills. Compose and decompose shapes so that children recognise a shape can have other shapes within it, just as numbers can.	Recognise and name common 2-D shapes [for example, rectangles (including squares), circles and triangles]	Identify and describe the properties of 2-D shapes, including the number of sides, and line symmetry in a vertical line Identify 2-D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid] compare and sort common 2-D shapes	Draw 2-D shapes	Compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes Identify lines of symmetry in 2-D shapes presented in different orientations	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	Draw 2-D shapes using given dimensions and angles Compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius
3D shapes	Compose and decompose shapes so that children recognise a shape can have other shapes within it, just as numbers can.	Recognise and name common 3-D shapes [for example, cuboids (including cubes), pyramids and spheres]	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] Compare and sort common 3-D shapes and everyday objects	Make 3-D shapes using modelling materials Recognise 3-D shapes in different orientations and describe them	*Conceptual Prerequisite: Continue to build 3D shapes, beginning to consider the 2D representations whilst doing so.*	Identify 3-D shapes, including cubes and other cuboids, from 2D representations	Recognise, describe and build simple 3D shapes, including making nets

Angles and lines				Recognise angles as a property of shape or a description of a turn Identify right angles, recognise that 2 right angles make a half-turn, 3 make three-quarters of a turn and 4 a complete turn Identify whether angles are greater than or less than a right angle Identify horizontal and vertical lines and pairs of perpendicular and parallel line	Identify acute and obtuse angles and compare and order angles up to 2 right angles by size Complete a simple symmetric figure with respect to a specific line of symmetry	Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles Draw given angles, and measure them in degrees (°) Identify: • angles at a point and 1 whole turn (total 360°) • angles at a point on a straight line and half a turn (total 180°) • other multiples of 90° Use the properties of rectangles to deduce related facts and find missing lengths and angles Distinguish between regular and irregular polygons based on reasoning about equal sides and angles	Find unknown angles in any triangles, quadrilaterals, and regular polygons Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angle

Position and direction	Select, rotate and manipulate shapes in order to develop spatial reasoning skills.	Describe position, direction and movement, including whole, half, quarter and three-quarter turns	Order and arrange combinations of mathematical objects in patterns and sequences Use mathematical vocabulary to describe position, direction and movement, including movement in a straight line and distinguishing between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anti-clockwise)	*Conceptual Prerequisite: Describe the movement of objects using up/down/left/right.* *Draw polygons by joining marked points.*	Describe positions on a 2D grid as coordinates in the first quadrant Describe movements between positions as translations of a given unit to the left/right and up/down Plot specified points and draw sides to complete a given polygon	Identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed	Describe positions on the full coordinate grid (all 4 quadrants) Draw and translate simple shapes on the coordinate plane, and reflect them in the axes

Theme	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	Statistics						
Present and interpret			Interpret and construct simple pictograms, tally charts, block diagrams and 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
Calculate and 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 [for example 'How many more?' and 'How many fewer?'] using information presented in scaled bar charts and pictograms and tables	Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs	Solve comparison, sum and difference problems using information presented in a line graph	Calculate and interpret the mean as an average