

Progression of Knowledge in Maths

Number and Place Value		EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	Counting	To know how to recite numbers in order to 10. To realise not only objects, but anything can be counted including steps, claps or jumps. To know how to count up to three or four objects by saying one number name for each item. To know how to count out up to six objects from a larger group. To know how to count actions or objects which cannot be moved. To know how to count objects to 10 and beginning to count beyond 10. To know how to count an irregular arrangement of up to ten objects. To estimate how many objects they can see and check by counting them. To know how to count reliably with numbers from one to 20.	To know how to count in multiples of twos, fives and tens from different multiples to develop their recognition of patterns in the number system, including varied and frequent practice through increasingly complex questions. To recognise and create repeating patterns with objects and with shapes. Know the term multiple and be able to recognize multiples of two, five and ten.	Know how to count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward.	Know how to count from 0 in multiples of 4, 8, 50 and 100.	Know how to count in multiples of 6, 7, 9, 25 and 1000. Know how to count backwards through zero to include negative numbers. Know how to find 1000 more or less than a given number. A positive number is greater than zero. A negative number is less than zero.	Know how to count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000. Temperatures can be measured in °C. 0°C is the freezing point of water and 100°C is the boiling point of water.	

	Reading and Writing Numbers	To show an interest in numerals in the environment. To use some number names accurately in play. To recognise some numerals of personal significance. To recognise numerals 1 to 5.	Know how to read and write numbers from 1 to 20 in numerals and words. Know how to count, read and write numbers to 100 in numerals.	Know how to read and write numbers to at least 100 in numerals and in words.	Know how to read and write numbers up to 1000 in numerals and in words.		Know how to read and write numbers to at least 1 000 000 and determine the value of each digit.	Know how to say, read and write, numbers up to 10 000 000 accurately and determine the value of each digit.
	Multiplication and Division – estimating and checking			Division is the opposite of multiplication and vice versa.	Inverse operations are opposites that reverse the effect of the other operation. Multiplication and Division are inverse operations.			Estimate means to quickly find, with some thought of the calculation, an approximate value close to the right value.
	Fractions – multiplying and dividing fractions						A proper fraction has a numerator that is less than the denominator. An improper fraction has a numerator equal to or greater than the denominator. A mixed number is the combination of whole number and a proper fraction.	To multiply fractions, multiply the numerators together and then multiply the denominators together. Write the answer in its simplest form.
								To divide fractions by whole numbers, multiply the denominator by the whole number.
	Multiplication and Division – multiplying and dividing by 10, 100 or 1000					A tenth is $\frac{1}{10}$ (1 divided by 10). A hundredth is $\frac{1}{100}$ (1 divided by 100).		In place value, each place is ten times the value of its place to the right.

	Number and Place Value - Rounding					For two or more digit numbers, if the number to the right of the place value number you are rounding is equal to or greater than 5, round up. If the number to the right of the place value number you are rounding is less than 5, round down.		
	Fractions - problem solving						$\frac{1}{2} = 50\% = 0.5$, $\frac{1}{4} = 25\% = 0.25$, $\frac{1}{5} = 20\% = 0.2$, $\frac{2}{5} = 40\% = 0.4$, $\frac{4}{5} = 80\% = 0.8$, $\frac{1}{10} = 10\% = 0.1$, $\frac{1}{25} = 4\%$, $\frac{1}{100} = 1\%$	
	Fractions- compare and order fractions and decimals				The numerator of a fraction is the top number and shows how many parts there are. The denominator is the bottom part of the fraction and shows into how many equal parts the item or number is divided. Unit fractions have a numerator of 1. Non-unit fractions have a numerator greater than 1. In place value, each place is 10 times the value of the place to its right, including after the decimal point.			
	Fractions - counting				A Tenth is 1 divided by 10 ($\frac{1}{10}$)	A tenth is 1 divided by 10 ($\frac{1}{10}$) and a hundredth is 1 divided by 100 ($\frac{1}{100}$)		
	Fractions - Adding and subtracting fractions				The numerator of a fraction is the top number and shows how many parts there are. The denominator is the bottom part of the fraction and shows into how many equal parts the item or number is divided.	A fraction where the numerator is bigger than the denominator is an improper fraction and has a value greater than 1.	The denominator is the bottom part of the fraction and shows into how many equal parts the item or number is divided.	Equivalent fractions have different numerators and denominators but are equal in value. Addition and subtraction can be carried out once the numerators or denominators have been multiplied or divided to get the same denominator. The answer is then found by adding or subtracting the numerator.

<u>Number</u>		<u>EYFS</u>	<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Year 4</u>	<u>Year 5</u>	<u>Year 6</u>
	Multiplication and Division – multiples, factors, prime numbers, square and cube numbers.					Multiples are the values in the numbers times table. For example, the multiples of six are 6, 12 and 18 etc. Multiplying by 2 is the same as doubling, multiplying by 4 is the same as doubling and doubling again. Multiplying by 10 and halving is the same as multiplying by 5.	Factors are whole numbers that divide exactly into another number. The original numbers are factors of the product number. Factor pairs are sets of two factors that when multiplied together give a particular number. Common factors are factors found in more than one number. Prime numbers are whole numbers that are greater than 1. Prime factors are prime numbers that can be multiplied together to give the original number. Composite numbers are non-prime numbers (whole numbers that can be made by multiplying more than one pair of factors. Prime numbers are whole numbers that are greater than 1 and can only divide by themselves. 1,2,3,5,7,11,13,17 and 19.	Multiples are the result after multiplying a number by an integer. They are in the given number's times table. Common multiples are multiples of two or more numbers. Factors are whole numbers that divide exactly into another number. Common factors are factors found in more than one number. Prime numbers are whole numbers that are greater than 1 and can only divide by themselves and 1.

							The notation for squared numbers is ² . Cubed numbers is ³ .	
	Fractions – finding fractions of amounts			Equivalence means of equal (the same) value. Two quarters 2/4 are equivalent to half 1/2	Unit fractions have a numerator of 1. Non-unit fractions have a numerator greater than 1.			
	Multiplication and division – multiplying and dividing mentally						Factors are whole numbers that divide exactly into another number. The original numbers are factors of the product number. Factor pairs are sets of two factors that when multiplied together give a particular number. A square number is a number multiplied by itself. A cube number is a number multiplied by itself three times.	
	Number and place value – comparing, reading and writing numbers.	To compare two groups of objects, saying when they have the same number. To use the language of ‘more’ and ‘fewer’ to compare two sets of objects. To place numbers one to 20 in order.		Less than < shows that the value to the left of it is lower than the value to the right. Greater than > shows that the value to the left of it is greater than the value to the right. Equals = shows that the number of each side should have or has the same value.	In Roman numerals I = 1, II = 2, III = 3, IV = 4, V = 5 VI = 6, VII = 7, VIII = 8, XI = 9, X = 10, XI = 11 and XII = 12.	In Roman numerals I=1, V = 5, X = 10, L=50 and C=100. All numbers between 1 and 100 can be written with a combination of these symbols. If a lower value numeral is placed after a higher	Positive integers are whole numbers greater than zero. Negative integers are whole numbers less than zero. In Roman numerals I=1, V = 5, X = 10, L=50, C=100. D=500 and M=1000. All	Negative integers are whole numbers less than zero.

						value numeral it indicates that they should be added together. If a lower value is placed before a higher value it should be subtracted from the higher value.	numbers can be written using a combination of these. If a lower value numeral is placed after a higher value numeral it indicates that they should be added together. If a lower value is placed before a higher value it should be subtracted from the higher value. Years can be written in Roman Numerals eg 2020 = MMXX	
	Multiplication and Division - Multiplication tables			Multiplication (x) is repeated addition and division (÷) is repeated subtraction. Division is also splitting or sharing into equal parts. Even numbers end in 0,2,4,6,8 and odd numbers end in 1,3,5,7,9.				
	Addition and Subtraction - estimating and checking			Inverse operations are opposites that reverse the effect of the other operation. Addition and subtraction are inverse operations.	Estimate means to quickly find, with some thought of a calculation and approximate value close to the right value.			
	Fractions - recognise, represent and name fractions		A half is one of two equal parts of a whole object, shape or quantity. A quarter is one of four equal parts of a whole object, shape or quantity.	A half is one of two equal parts of a whole object, shape or quantity. A quarter is one of four equal parts of a whole object, shape or quantity. A third is one of three equal parts of a whole object, shape or quantity. Recognize and use $\frac{1}{2}$, $\frac{1}{4}$ and $\frac{1}{3}$. Know that $\frac{1}{2}$ and $\frac{2}{4}$ are the same fraction.	Equivalence means of equal (the same) value. The numerator of the fraction is the top part and shows how many parts there are. The denominator of the fraction is the bottom part and shows how many equal parts the object or number is divided into.	A tenth is $\frac{1}{10}$ (1 divided by 10) and a hundredth is $\frac{1}{100}$ (1 divided by 100). A decimal number is a number with a decimal point which shows the whole number to the left of the point and tenths, hundredths, thousandths etc to the right.	A proper fraction has a numerator less than the denominator. An improper fraction has a numerator equal to or greater than the denominator. A mixed number is a combination of a whole number and a proper fraction.	A simple fraction has a whole number for a numerator or denominator. A fraction is the representation of the division of the numerator by the denominator. Fractions have decimal and percentage equivalences. They

					Unit fractions have a numerator of 1. Non-unit fractions have a numerator greater than 1.	Fractions have decimal equivalences eg, 0.5 = 1/2 0.1 = 1/10 0.25 = ¼ and 0.75 = 3/4	A tenth is 1 divided by 10 or 1/10 or 0.1, A hundredth is 1 divided by 100 or 1/100 or 0.01. A thousandth is 1 divided by 1000 or 1/1000 or 0.001	also form part of mixed numbers. Fractions can be simplified by dividing the numerator and denominator by the same common factor. Multiples are the result after multiplying a number by an integer. Common multiples are multiples of two or more numbers. Multiplying a numerator and a denominator by a common multiple can give fractions in the same denomination.
	Multiplication and Division – problem solving and applying.		Know how to make connections between arrays, number patterns, and counting in twos, fives and tens. Through grouping and sharing small quantities, pupils begin to understand multiplication and division; doubling numbers and quantities; and finding simple fractions of objects, numbers and quantities.	Know a variety of language to describe multiplication and division. Know how to count from 0 in multiples of 4, 8, 50 and 100. Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers and use them to solve simple problems, demonstrating an understanding of commutativity as necessary. Know how to connect the 10 multiplication table to place value, and the 5 multiplication table to the divisions on the clock face.	A positive number is greater than zero. A negative number is less than zero. An integer is a whole number that can be scaled up using repeated addition or multiplication. Correspondence in maths is how things are related. There are different types of relationship; one to one, one to many, many to one and many to many.	The distributive law is that multiplying a number by a group of numbers added together is the same as doing each multiplication separately then adding them together, The associative law is that it doesn't matter how numbers are grouped (calculated) when adding or multiplying them.	The acronym BODMAS can be used to remember the order in which operations should be calculated. Brackets, Orders (powers), Division and Multiplication (rank equally), addition and subtraction (rank equally).	

	Multiplication and Division – multiplying and dividing using written methods		Doubling is adding the same number to itself. Halving is dividing or sharing a number into two equal parts or groups.	Numbers can be multiplied in any order and the answer will be the same. Numbers can't be divided in any order to give the same answer.			A remainder is the whole number left over after the division has been calculated.	Remainders can be interpreted as fractions or rounded to whole numbers depending on the context.
	Addition and Subtraction – problem solving and applying	To show an interest in number problems. To begin to identify own mathematical problems based on own interests and fascinations.	Know ordinal numbers and solve simple concrete problems.	Know how to use place value and number facts to solve related problems to develop fluency.	Know how to solve number problems and practical problems involving these ideas.	Know how to solve number and practical problems that involve all of the above and with increasingly large positive numbers.		The acronym BODMAS can be used to remember the order in which operations should be calculated. Brackets, Orders (powers), Division and Multiplication (rank equally), addition and subtraction (rank equally).
	Addition and Subtraction – adding and subtracting mentally	Know how to find the total of items in two groups by counting all of them. Begin to use the vocabulary involved in adding and subtracting in practical activities and discussion. Know how to add and subtract two single-digit numbers and count on and back to find the answer using quantities and objects	A number bond is a pair of numbers that add up to a given number. 0,1,2,3,4,5,6,7,8,9 are 1 digit numbers. They are ones numbers. Two digit numbers have a tens number and a ones number.	Partitioning breaks a number into its place value units. Know that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot. Know how to add and subtract numbers using an efficient strategy, explaining their method verbally using concrete objects, pictorial representations, and mentally, including: a two-digit number and ones, a two-digit number and tens, two two-digit numbers, add three one-digit numbers.	Know how to add and subtract numbers mentally, including: two-digit numbers, where the answers could exceed 100, a three-digit number and ones, a three-digit number and tens and a three-digit number and hundreds.	Continue to practise both mental methods and columnar addition and subtraction with increasingly large numbers to aid fluency.	Know how to add and subtract numbers mentally with increasingly large numbers.	Know how to perform mental calculations, including with mixed operations and large numbers.
	Addition and Subtraction – adding and subtracting using written methods		Addition + is putting two or more numbers or objects together to make a larger number or group of objects. Subtraction – is removing or taking away numbers or groups of objects. What is	Numbers can be added in any order and the answer will be the same. Numbers cannot be subtracted in any order to give the same answer.	See calculation policy for formal calculation methods appropriate to the year group.			

			left is the difference between the two numbers. The equals sign = shows that on both sides of the equation have the same value.					
	Number and Place Value – identifying and representing numbers		Equal means the same in amount, size or number. Greater than means a larger amount or size, Lesser than means a smaller amount or size. Most means the biggest number or amount of something and least means the smallest amount of something.	Estimate means to have a sensible guess. Estimating is guessing the approximate amount, size or value of something.	A digit is any number from 0-9. In place value. Each place is 10 times the amount to its right.			
	Fractions – percentages						% is the symbol for % and percent is the number of parts per hundred. 100% = 100/100 = 1.0 50% = 50/100 = $\frac{1}{2}$ = 0.5, 25% = 25/100 = $\frac{1}{4}$ = 0.25, 75% = 75/100 = $\frac{3}{4}$ = 0.75, 10% = 10/100 = 0.1, 20% = 20/100 = $\frac{1}{5}$ = 0.2	

Measurement	Length, height, mass, weight, capacity and volume	Know how to order two or three items by length or height. Know how to order two items by weight or capacity. Use everyday languages to talk about size, weight, capacity, position, distance, time and money to compare quantities and objects and solve problems.	Length is the measure of how long something is end to end. Height is a measure of how high something is from head to foot or top to base. Mass or weight is the measure of the amount of something and how heavy it is. Capacity is how much a container can hold. Volume is the space that water takes up in a container.	Length, width and height can be measured in cm, m. There are 100cm in a metre. Mass can be measured in kg, or g. 1000g = 1kg. Temperatures can be measured in degrees Celsius. 0 degrees is the freezing point of water and 100 degrees is the boiling point. Capacity can be measured in ml or l. There are 1000ml in 1 litre.	Length, width and height can be measured in cm, m. There are 100cm in a metre. Mass can be measured in kg, or g. 1000g = 1kg. Temperatures can be measured in degrees Celsius. 0 degrees is the freezing point of water and 100 degrees is the boiling point. Capacity can be measured in ml or l. There are 1000ml in 1 litre.	There are 100cm in a meter, There are 1000m in a km. There are 1000g in 1kg. There are 1000ml in 1 litre. Kilo is derived from a Greek work meaning thousand.	Imperial units were used in Britain from the 1820's to the 1960's when the metric unit took over, which uses multiples of 10. 1 inch = 2.5 cm. 1 foot = 12 inches = 30cm (approximately). 1 yard = 3 feet = 941cm (approximately 1m). 1 mile = 1760yards = 1.6km. 1 ounce = 28g, 1 pound = 16 ounces = 453g (approximately 1/2kg). 1 pint = 568ml (approximately 1/2 l). 1 gallon = 8pints = 4.5l. Capacity is a measure of how much something can hold. Volume is the measure of the space that an object or liquid takes up.	Volume of cubes and cuboids are calculated by multiplying the length, width and height. Standard units of volume are cubic centimeters or cm³ or cubic meters or m³.
	Time	Use everyday language related to time. Order and sequence familiar events. Measure short periods of time in simple ways	Events can be sequenced using these words: before, after, now, next, first, today, tomorrow, yesterday, morning, afternoon, after, before, earlier or later. The past refers to events that have already happened. The present refers to events that are happening now and the future refers to events that haven't yet happened. Time can be described using these words -quicker, slower, earlier, later.	An analogue clock face can be divided into 60 minutes. It shows 5 minute intervals showing the numbers 1-12 around the clock face. There are 60 seconds in a minute, 60 minutes in an hour and 24 hours in a day. Clockwise is the movement around the clock from left to right. On an analogue clock the minute hand points to 3 at quarter past and 9 at quarter to the hour.	Duration is the length of time something lasts. There are 365 days in a year and 364 in a leap year, which occurs every fourth year. There are 30 days in Sept, April, June and November. 31 days in Jan, March, May, July, August, Oct and Dec. 28 days in February but 29 in every leap year.	There are 60 seconds in an hour and 60 seconds in a minute. There are 7 days in a week and between 28 and 31 days in a month. 365 days in a year and 364 in a leap year, which occurs every fourth year.		

			There are seven days of the week, Mon, Tue, Wed, Thur, Fri, Sat and Sun. There are twelve months in the year and there are four seasons in the year. The hour hand is the shorter hand on the clock and the minute hand is the longer hand on the clock. On an analogue clock the minute hand points to 12 when it is o'clock time and points to 6 when it is half past the hour. Time can be measured using hours, minutes and seconds.		O'clock is used after a number from 1 to 12 to give the time when it is exactly to the hour. A time in the morning is followed by am and in the afternoon pm. Noon is 12pm and Midnight is 12am.			
	Money	Begin to use everyday language related to money.	Recognise and know the value of different denominations of coins and notes.	Money can be measured in £ pounds and p pence. There are 100p in a £1. Change is the money that is returned when they have paid a higher amount than the price.	Money can be measured in £ pounds and p pence. There are 100p in a £1.			
	Perimeter and Area				The perimeter is the total distance around the edge of a shape	The perimeter is the total distance around the edge of a shape Area is the amount of space inside the boundary of a 2D object or face of a 3D object.	A composite shape is made of two or more rectilinear figures (polygons with interior angles of 90° or 270° including squares) The area of a rectangle (including squares) is calculated by multiplying its height by its width. Standard units of area are square centimeters or centimeters squared cm^2 and square meters or meters squared m^2.	$A = H \times W$ is the formula for calculating the area of a rectangle where A = area, H = height, W = width. $V = L \times W \times H$ is the formula for calculating the volume of a cuboid where V = volume, L = length, W = width and H = height. The area of a triangle is found by multiplying its height by the width and then dividing by 2. The area of a parallelogram is found

								by multiplying the base by the height.
	Shapes and properties	To show an interest in shape and space by playing with shapes or making arrangements with objects. To show interest in shape by sustained construction activity or by talking about shapes or arrangements. To show interest in shapes in the environment. To use shapes appropriately for tasks. To begin to talk about shapes in everyday objects, e.g. 'round' and 'tall'. To begin to use mathematical names for 'solid' 3D shapes and 'flat' 2D shapes, and mathematical terms to describe shapes. To select a particular named shapes. To explore characteristics of everyday objects and shapes and use mathematical language to describe them.	There are common 2D shapes - squares, rectangles, circles, triangles, pentagons, hexagons and octagons. Common 3D shapes include; spheres, cubes, cuboids, cones, cylinders and pyramids.	A 2-D shape only has 2 measurements. 2D shapes can be described by their number of sides and vertices (corners). A shape has symmetry in a vertical line if a line can be drawn down the middle of it and the left side is a mirror image of the right side. Squares and rectangles have 4 sides and a vertical line of symmetry. Circles have one side and a vertical line of symmetry. Triangles have three sides and may have a vertical line of symmetry. A 3-D shape has three measurements and can be held. The flat surface of a 3-D shape is called a face. The faces of cuboids can be rectangles and squares. The faces on a cube are squares. Two of the faces on a cylinder are circles. One of the faces on a pyramid may be a circle, square or rectangle. A vertex of a 3D shape is a corner where lines meet. The plural of vertex is vertices. An edge of a 3-D shape joins two vertices. The flat surface of a 3-D shape is called a face.	A 2-D shape only has 2 measurements. 2D shapes can be described by their number of sides and vertices (corners). A 3-D shape has three measurements and can be held. A vertex of a 3-D shape is where lines meet. The plural of vertex is vertices. An edge of a 3-D shape joins two vertices. The flat surface of a 3-D shape is called a face.	A quadrilateral is a four sided shape. A square has four equal sides, four right angles 90° and four lines of symmetry. A rectangle or oblong has two sets of two equal sides, four right angles 90° and four lines of symmetry. A parallelogram has two sets of two equal sides, two sets of two equal angles and usually no lines of symmetry. A rhombus has four equal sides, two sets of two equal angles and a line of symmetry. A trapezium has at least two parallel sides and can have pairs of equal angles and a line of symmetry. An equilateral triangle has three equal sides and angles and three lines of symmetry. An isosceles triangle has two equal sides and angles. A scalene triangle has no equal sides and no equal angles. A right angled triangle has a 90°	A polygon (a 2-D shape formed with straight lines) is regular when all sides and angles are equal. A polygon is irregular is it has different length sides and/or angles.	The conventional marking for parallel lines are > in the centre of each of the pair, two parallel sides > > is used for a second pair of parallel lines within a shape. Arcs are used to represent angles and a square is used to represent a right angle 90°. Some 3-D shapes like cubes and pyramids can be opened and unopened to create a flat shape. The unfolded shape is called a net. A circle is a 2-D shape. The total distance around the edge of a circle is called the circumference. Diameter of a circle is the straight line segment that passes through the centre. Radius is a straight line from the center to the circumference.

						angle. The angles in any triangle add up to 180°.		
	Position and Direction	Use positional language. Describe their relative position such as 'behind' or 'next to'.	Position, direction and movement can be described using these words: top, middle bottom, on top of, in front of, above, between, around, near, close, far, up, down, turn, forwards, backwards, inside, outside, left and right.	A half $\frac{1}{2}$ is one of two equal parts of a whole object, shape, quantity or movement. A $\frac{1}{4}$ quarter is one of four equal parts of a whole object, shape, quantity or movement. Clockwise is the movement in the direction of the rotation of the hands of a clock. The opposite direction is anti-clockwise.		Coordinates are numbers or letters which determine the position of a point or shape in a grid, graph or map. The x-axis is horizontal from or through 0 and the y-axis is vertical from or through 0. When reading co-ordinates x is read before y. (like in the alphabet) A translation moves a shape up, down or from side to side, without reflecting it or changing the shape.	A reflection is the image of a shape, if it was looked at in a mirror. Shapes that have been translated or reflected are the same size as the original.	A full coordinate grid has four quadrants, (first, second, third and fourth). The first quadrant is the top right, second is the top left, third is the bottom left and fourth is the bottom right. Reflected shapes are the same distance from the axis that they have been reflected.
	Angles			A vertex is where two lines meet. An angle is the amount of turn or space, between two lines around the vertex and is measured in degrees. (°). A right angle is a quarter-turn. Two right angles make a half turn and three right angles make a three-quarter turn. Four right angles make a full turn. Horizontal lines go across, Vertical lines go up and down.	A vertex is where two lines meet. An angle is the amount of turn or space, between two lines around the vertex and is measured in degrees. (°). A right angle is a quarter-turn. Two right angles make a half turn and three right angles make a three-quarter turn. Four right angles make a full turn. Horizontal lines go across, Vertical lines go up and down. Perpendicular lines are	An acute angle is less than a right angle 90°, an obtuse angle is greater than a right angle 90° but less than a straight angle 180°.	A reflex angle is greater than a straight angle 180° but less than 360° (a complete rotation).	Vertically opposite angles are the angles opposite each other when two lines cross and are always equal. The angles in a quadrilateral or polygon add up to 360°. The angles in a triangle add up to 180°.

					lines that form a right angle where they meet or cross. They are always the same distance apart.			
	Symmetry			A shape or object is symmetrical if you can draw a straight line vertically, horizontally or diagonally down the middle of it and the two sides are a mirror image of each other. The straight lines are called lines of symmetry.				
<u>Statistics</u>	Recording and organising	To record, using marks that they can interpret and explain.		Data is facts and figures. A table in maths is a way to set out data so that it is easy to record and see. Tally marks are a quick way to keep track of numbers in groups of five. A pictogram uses pictures to represent data.		Discrete data can only be shown in integers eg the number of children in a class. Continuous data can take any value including decimals.		
	Averages							Mean is a type of average. It is the total of numbers divided by how many numbers there were. Mode is the value that appears most frequently in a data set. Median is the middle of a sorted list of numbers. The range is the difference between the lowest and highest numbers in a set of data.

<u>Mathematical</u> <u>vocabulary</u>		To build up vocabulary that reflects the breadth of their experiences. To extend vocabulary, especially by grouping and naming, exploring the meaning and sounds of new words.	To read and spell mathematical vocabulary, at a level consistent with their increasing word reading and spelling knowledge at year 1.	To read and spell mathematical vocabulary, at a level consistent with their increasing word reading and spelling knowledge at key stage 1.	To read and spell mathematical vocabulary correctly and confidently, using their growing word reading knowledge and their knowledge of spelling.	To read and spell mathematical vocabulary correctly and confidently, using their growing word reading knowledge and their knowledge of spelling.	To read, spell and pronounce mathematical vocabulary correctly.	To read, spell and pronounce mathematical vocabulary correctly.
--	--	--	--	---	---	---	--	--

Ratio and Proportion		EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	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, 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.

Measurement		EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	Comparing and estimating		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] * sequence events in chronological order using language [e.g. before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening]		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)	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.
	Measuring and calculating	Daily routine Recognise length, height and distance Understand the difference between weight and capacity	measure and begin to record the following: * lengths and heights * mass/weight * capacity and volume * time (hours, minutes, seconds) recognise and know the value of different denominations of coins and notes	choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature ($^{\circ}\text{C}$); capacity (liters/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels recognise and use symbols for pounds (£) and pence (p); combine amounts	measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml) measure the perimeter of simple 2-D shapes 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 measure and calculate the perimeter of a rectilinear figure find the area of rectilinear shapes by counting squares	measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml) measure the perimeter of simple 2-D shapes calculate and compare the area of squares and rectangles including using standard units, square centimeters (cm^2) and square meters (m^2) and	estimate, compare and calculate different measures, including money in pounds and pence measure and calculate the perimeter of a rectilinear figure calculate the area of parallelograms and triangles calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimeters (cm^3) and

				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			estimate the area of irregular shapes recognise and use square numbers and cube numbers, and the notation for squared (^{2}) and cubed (^{3})	cubic meters (m^3), and extending to other units [e.g. mm^3 and km^3]. recognise when it is possible to use formulae for area and volume of shapes
	Telling the time	Daily routine Order and sequence events measure short periods of time	tell the time to the hour and half past the hour and draw the hands on a clock face to show these times. recognise and use language relating to dates, including days of the week, weeks, months and years	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.	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, hours and o'clock; use vocabulary such as a.m./p.m., morning, afternoon, noon and midnight	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 (appears also in Converting)	solve problems involving converting between units of time	
	Converting			know the number of minutes in an hour and the number of hours in a day.	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. kilometer to meter; hour to minute)	convert between different units of metric measure (e.g. kilometre and metre; centimetre and metre; centimetre and	use, read, write and convert between standard units, converting measurements of length, mass, volume

				(appears also in Telling the Time)		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	millimetre; gram and kilogram; litre and millilitre) solve problems involving converting between units of time understand and use equivalences between metric units and common imperial units such as inches, pounds and pints	and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to three decimal places solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate convert between miles and kilometers
--	--	--	--	------------------------------------	--	---	---	---

Geometry: Properties of shape		EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	Identifying shapes and their properties	talk about the shapes of everyday objects recognise 2-D and 3-D shapes; using mathematical terms selects a particular named shape	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	identify and describe the properties of 2-D shapes, including the number of sides, vertices, angles 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 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 illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius

				and a triangle on a pyramid]				
	Drawing and constructing	show an interest in shape by playing with shapes Make simple patterns Explore more complex patterns			draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them	complete a simple symmetric figure with respect to a specific line of symmetry	draw given angles, and measure them in degrees (°)	draw 2-D shapes using given dimensions and angles recognise, describe and build simple 3-D shapes, including making nets
	Comparing and classifying	identify similarities of shapes in the environment order two or three items by length and height order two items by weigh or capacity	compare and sort common 2-D and 3-D shapes and everyday objects		Compare and sort common 2-D and 3D shapes based on their properties	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
	Angles				recognise angles as a property of shape or a description of a turn identify right angles, recognise that two right angles make a half-turn, three make three quarters of a turn and four a complete turn; identify whether angles are greater than or less than a right angle	identify acute and obtuse angles and compare and order angles up to two right angles by size	know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles 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°)	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		* other multiples of 90°	
--	--	--	--	--	--	---------------------------------	--

Geometry: Position and direction		EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	Position, direction and movement	use positional language describe the position of an object	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 as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anti-clockwise)	Confidently 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)	describe positions on a 2-D 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 four quadrants) draw and translate simple shapes on the coordinate plane, and reflect them in the axes.
	Pattern	Use common shapes to create patterns and build models	order and arrange combinations of mathematical objects in patterns and sequences					

<u>Statistics</u>		EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	Interpreting, constructing and presenting data		Ask simple questions to collect data. Know how to create a tally chart	interpret and construct simple pictograms, tally charts, block diagrams and simple tables 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	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
	Solving problems			Solve one-step questions [e.g. How many more? How fewer?] using information presented in bar charts, pictograms and tables	solve one-step and two-step questions 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

Algebra		EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	Equations		solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as $7 = \square - 9$ represent and use number bonds and related subtraction facts within 20	recognise and use the inverse relationship between addition and subtraction and use this to check calculations and missing number problems . recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100	solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction. solve problems, including missing number problems, involving multiplication and division, including integer scaling		use the properties of rectangles to deduce related facts and find missing lengths and angles	express missing number problems algebraically find pairs of numbers that satisfy number sentences involving two unknowns enumerate all possibilities of combinations of two variables
	Formulae					Perimeter can be expressed algebraically as $2(a + b)$ where a and b are the dimensions in the same unit.	use simple formulae recognise when it is possible to use formulae for area and volume of shapes	
	Sequences	Know how to make a simple pattern of shapes or colours etc	sequence events in chronological order using language such as: before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening	compare and sequence intervals of time order and arrange combinations of mathematical objects in patterns				Perimeter can be expressed algebraically as $2(a + b)$ where a and b are the dimensions in the same unit.

