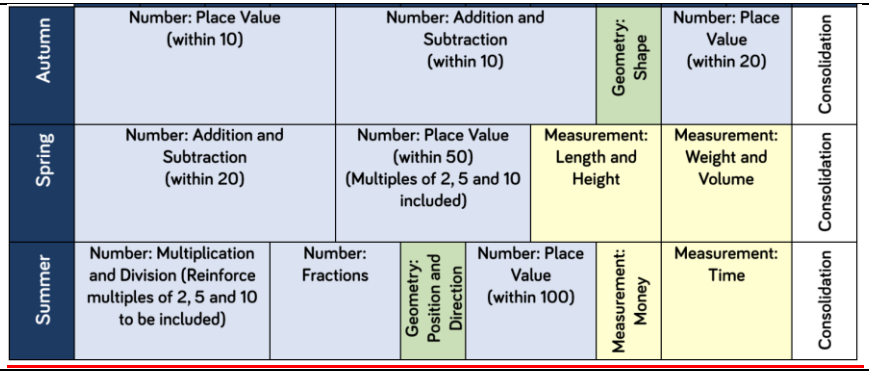
MATHS – WHOLE SCHOOL

OUR AIMS

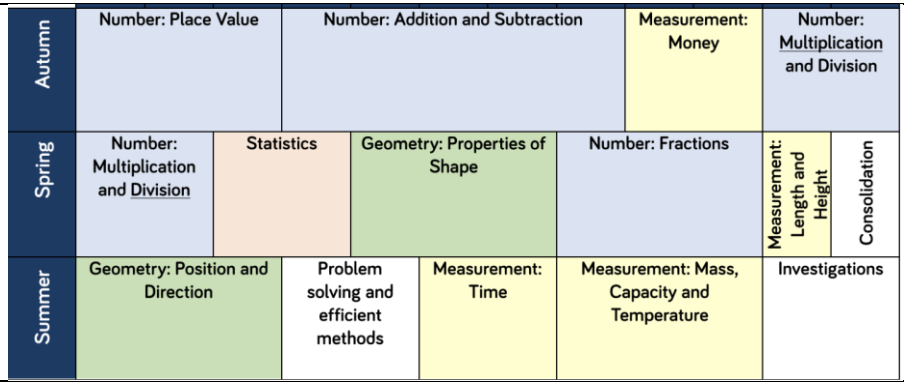
To develop The Gillford Centre student's broad overview of Mathematics. Students at The Gillford Centre will have a firm grasp on the key topics of the national curriculum for Number, Algebra, Geometry, Measurement, Ratio and Statistics. The skills that are imbedded within the content will help and enable the students grow as inquisitive critical thinkers. Classwork will have focus on supporting their understanding of mathematical language and problem solving. Functional use of mathematics and relating it to the real world will enable pupils to develop a broader understanding of mathematics.

Year 1

Term	**Unit of Study**	**Key Skills Learning**
Yearly	Breath of study: Maths	
Autumn Term	Number- Place Value(within 10) Number- Addition & Subtraction (within 10) Geometry- Shape Number- Place Value (within 20)	Count to and across 100 Count in multiples of 2's, 5's and 10's Read and write numbers from 1 to 20 Given a number identify one more or one less Recognise and name 2D shapes including rectangles, circles and triangles. Read, write and interpret mathematical statements involving addition and subtraction and equal signs Represent and use number bonds and related subtraction facts within 10 Add and subtract one-digit and two-digit numbers to 10, including zero Solve one step and two step problems that involve addition and subtraction using concrete objects and pictorial representations and missing numbers problems such as 2 + □ =10 Recognise and name common 2-D shapes, circles and triangles

Spring Term	Number- Addition & Subtraction (within 20) Number- Place Value (within 50) Measurement- Length & Height Measurement- Weight & Volume	Count to and across 100, forwards and backwards beginning from 0 or 1, or from any given number Count numbers to 100 in numerals; count in multiples of 2, 5s and 10's Identify and represent numbers using objects and pictorial representations Read and write numbers to 100 in numerals Read and write numbers from 1 to 20 in numerals and words. Given a number identify one more or one less Read, write and interpret mathematical statements involving addition and subtraction and equal signs Represent and use number bonds and related subtraction facts within 20 Add and subtract one-digit and two-digit numbers to 20, including zero Solve one step and two step problems that involve addition and subtraction using concrete objects and pictorial representations and missing numbers problems such as 2 + □ =10 Compare, describe and solve practical problems for: - Lengths and heights (e.g. long/short, double/half) - Mass/weight (e.g. heavy/light) - Capacity and volume (e.g. empty/full, less than/more than) - Time (e.g. quicker/slower) Measure and begin to record the following: - Lengths and heights - Mass/weight - Capacity and volume - Time Compare, describe and solve practical problems for length and heights. Mass /weight, capacity and column and time Measure and begin to record length and heights, mass/weight, capacity and volume, time Recognise and name common 3-D shapes including cubes, pyramids and spheres
Summer Term	Number – Multiplication & Division Number – Fractions Geometry – Position & Direction Number- Place Value (within 100) Measurement- Money Measurement- Time	Solve one-step problems including multiplication and division, by calculating the answers by using concrete objects, pictorial representations, and arrays with the support of the teacher Recognise a half, and know that it is one of two equal parts of an object shape or quantity Recognise a quarter, and know that it is one of four equal parts of an object shape or quantity Compare, describe and solve practical problems for length and heights. Mass /weight, capacity and column and time Measure and begin to record length and heights, mass/weight, capacity and volume, time Recognise and know the value of different denominations of coins an notes Sequence event in chronological order using language e.g. after, next, first, today, yesterday, morning, afternoon 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. Describe position, direction and movement, including whole, half, quarter and three-quarter turns

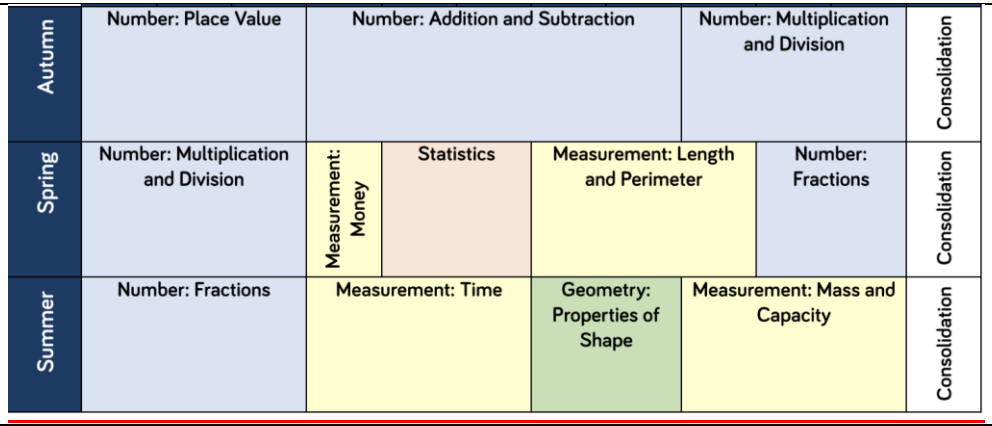
Year 2

Term	Unit of Study	Key Skills Learning
Yearly	Breath of study: Maths	
Autumn Term	Number- Place Value Number- Addition & Subtraction Measurement- Money Number- Multiplication & Division	Count in steps of 2,3 and 5 from 0, and in tens from any number, forward and backwards. Read and write numbers to at leat 100 in numerals and words Identify, represent and estimate numbers using different representations including the number line Recognise the place value of each digit in a two-digit number (tens, ones) Compare and order numbers from 1 – 100, use < > and = signs Use place value and number facts to solve problems Recall and use addition and subtraction facts to 20 fluently, derive and use related facts up to 100 Show that addition of two numbers can be done in any order (commutative) and subtraction of one number to another cannot Recgnise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems. 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 Solve problems with additiona and subtractios: - Using concrete objects and pictorial representations, including those involving numbers, quantities and measures - Applying their increasing nowledge of mental and written methods. Recall and use multiplication and division facts for the 2,5 and 10 multiplication tables, including recognisising odd and even numbers

		Show that multiplication of two numbers can be donein any order (commutative) and division of one number by another cannot Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication, division and equals signs Solve problems involving multiplication and division, using arrays, repeated addition, mental methods and multiplcation and division facts 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
Spring Term	Number- Multiplication & Division Statistics Geometry- Properties of Shape Number- Fractions Measurement- Length & Height	Recall and use multiplication and division facts for the 2,5 and 10 multiplication tables, including recognisising odd and even numbers Show that multiplication of two numbers can be donein any order (commutative) and division of one number by another cannot Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication, division and equals signs Solve problems involving multiplication and division, using arrays, repeated addition, mental methods and multiplcation and division facts Recognise, find, name and write 1/3, $\frac{1}{4}$, 2/4 and $\frac{3}{4}$ of a length, shape, set of objects or quantities Recognise the equivalence of 2/4 and $\frac{1}{2}$ Write simple fractions for example $\frac{1}{2}$ of 6 = 3 Choose and use appropriate standard units to estimate and measure length and height. Mass/weight, temperature, capacity to the nearest appropriate unit Using rulers, scales, thermometers and measuring vessels compare and order lengths, mass, volume/capacity and record the results using >, < and = Identify and describe the properties of 2D shapes, including the number of sides and line symmetry in a vertical line Identify 2-D shapes on the surface of 3-D shapes Compare and sort common 2-D shapes and everyday objects Recognise and name common 3-D shapes including cubes, pyramids and spheres Compare and sort common 3-D shapes and everyday objects 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 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

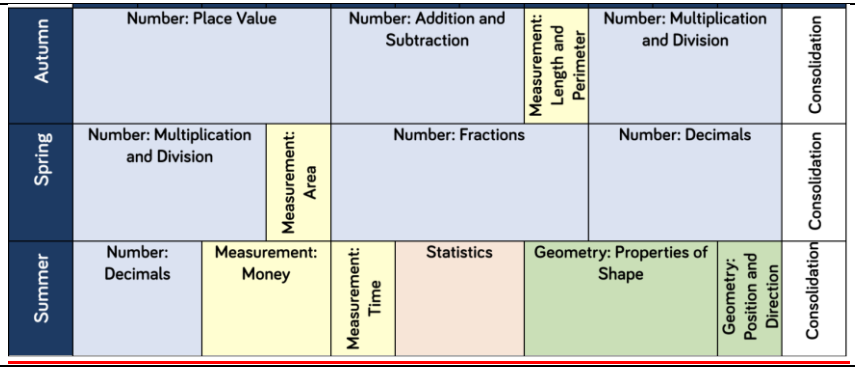
Summer Term	Geometry- Position & Direction Problem Solving & efficient Methods Measurement- Time Measurement- Mass, Capacity & Temperature Investigations	Choose and use appropriate standard units to estimate and measure length and height. Mass/weight, temperature, capacity to the nearest appropriate unit Using rulers, scales, thermometers and measuring vessels compare and order lengths, mass, volume/capacity and record the results using >, < and = Compare and sequence intervals of time Tell and write the time to five minutes including $\frac{1}{4}$ past/to the hour and draw the hands on a clock face to show the times Know the number of minutes in an hour and the number of hours in a day 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

Year 3

Term	Unit of Study	Key Skills Learning
Yearly	Breath of study: Maths	
Autumn Term	Number- Place Value Number- Addition & Subtraction Number- Multiplication & Division	Count form 0 in multiples of 4,8, 50 and 100. Find 10 or 100 more or less Identify, represent and estimate numbers using different representations Read and write numbers up to 1000 in numerals and in words Compare and order numbers up to 1 000 Recognise the place value of each digit in a three- digit number (hundreds,tens,ones) Solve number problems and practical problems incvolving rounding Estimate the answer to a calculation and use inverse operations to check answers 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 with up to three-digits, using formal written methods of column addition and subtraction Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction Recall and use multiplication and division facts for the 3,4 and 8 multiplication tables Write and caculate mathematical statements for multiplciation and division using the multiplication tables that they know, including for two-digit numbers, using mental and progressins to formal written methods.
Spring Term	Number- Multiplication & Division Measurement- Money	Write and caculate mathematical statements for multiplciation and division using the multiplication tables that they know, including for two-digit numbers, using mental and progressins to formal written methods

	Statistics Measurement- length & Perimeter Number - Fractions	Solve problems including missing number problems , involving multiplication and division, including positive integer scaling Count up and down in tenths, understand tenths arise form dividing an object/amount into ten equal parts Recognise, find and write fractions of a discrete set of numbers with small denominators. Recognise and use fractions as numbers with small denominators. Measure, compare, add and subtract lengths, mass, volume/capacity Add and subtract amounts of money to give change, using both £ and p in practical contexts Measure the perimeter of simple 2-D shapes Interpret and present data using bar charts, pictograms and tables Solve one-step and two-step questions using information presented in scaled bar charts and pictograms and tables
Summer Term	Number – Fractions Measurement- Time Geometry- Properties of Shape Measurement-Mass & Capacity	Recognise and show equivalent fractions with small denominators using diagrams Compare and order unit fractions, and fractions with the same denominators Add and subtract fractions with the same denominator and within one whole Measure, compare, add and subtract lengths, mass, volume/capacity Tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12 hour to 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 noon and midnight. Know the numbers of seconds in a minute and the number of days in each month, year, leap year Compare durations of events e.g. time by events or tasks Draw 2-D shapes Make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them Recognise angles as a property of shape or a description of a turn Identify right angle, 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 horizontal and vertical lines and pairs perpendicular and parallel lines

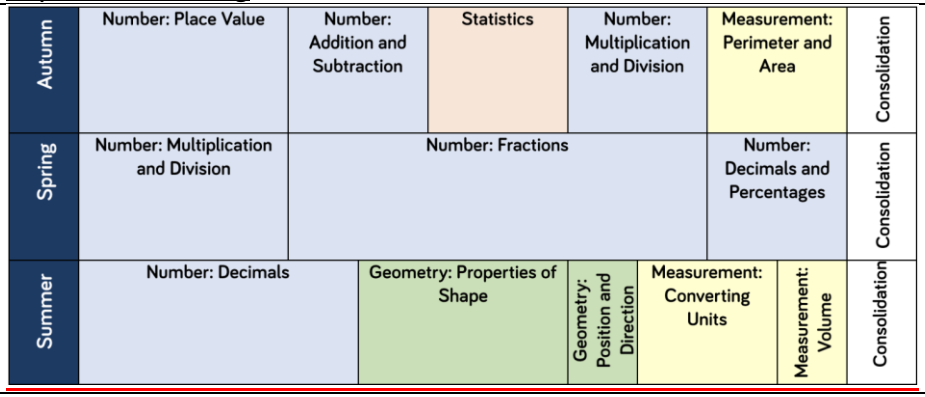
Year 4

Term	Unit of Study	Key Skills Learning
Yearly	Breath of study: Maths	
Autumn Term	Number- Place Value Number- Addition & Subtraction Measurement- length & Perimeter Number- Multiplication & Division	Count in multiples of 6, 7, 9, 25 and 1000. Count backwards through zero to include negative numbers. Identify, represent and estimate numbers using different representations Read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include zero and the concept of place value. Find 1 000 more or less than a given number Recognise the place value of each digit in a four digit number (thousands, hundreds, tens, ones) Order and compare numbers beyond 1 000 Round any numbers to the nearest 10, 100, 1 000 Solve number and practical problems involving rounding with increasingly larger positive numbers Estimate and use inverse proportions to a calculation Add and subtract numbers with up to 4 digits using the formal written method for column addition and subtraction where necessary Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why Recall multiplication and division facts for multiplication tables up t 12 x 12 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 Recognise and use factor pairs and commutativity in mental calculations Convert between different unit of measure e.g. km to m, hour to minute Estimate, compare and calculate different measures

		Measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres Find the area of rectilinear shapes by counting squares
Spring Term	Number- Multiplication & Division Measurement- Area Number- Fractions Number- Decimals	Recall multiplication and division facts for multiplication tables up t 12 x 12 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 Recognise and use factor pairs and commutativity in mental calculations Multiply two-digit and three-digit numbers by a one-digit number using formal written layout Solve problems involving multiplication using the distributive law to multiply two-digit numbers by one digit Count up and down in hundredths, know that hundredths arise when dividing an object by 100 and dividing tenths by 10. Recognise and show, using diagrams, families of common equivalent fractions. Add and subtract fractions with the same denominator Solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities- where the answer is a whole number. Find the effect of dividing a one-digit number by 10 and 100 Solve simple measure and money problems involving fractions and decimals to two decimal places Convert between different unit of measure e.g. km to m, hour to minute Estimate, compare and calculate different measures Measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres Find the area of rectilinear shapes by counting squares
Summer Term	Number- Decimals Measurement-Money Measurement- Time Statistics Geometry- Properties of Shape Geometry- Position & Direction	Recognise and write decimal equivalents of any number of tenths or hundredths Recognise and write decimal equivalents to $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$ Round decimals with one decimal place to the nearest whole number Compare numbers with the same number of decimal places up to two decimal places Solve simple measure and money problems involving fractions and decimals to two decimal places Convert between different unit of measure e.g. km to m, hour to minute Estimate, compare and calculate different measures Estimate, compare and calculate different measures, including money in pounds and pence 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 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 orientation. Identify acute and obtuse angles and compare and order angles up to two right angles by size Identify lines of symmetry in 2-D shapes presented in different orientations

		Complete a simple symmetric figure with respect to a specific line of symmetry Describe positions on s 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 Interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs Solve comparison, sum and difference problems using information presented in bar charts, pictograms tables and other graphs

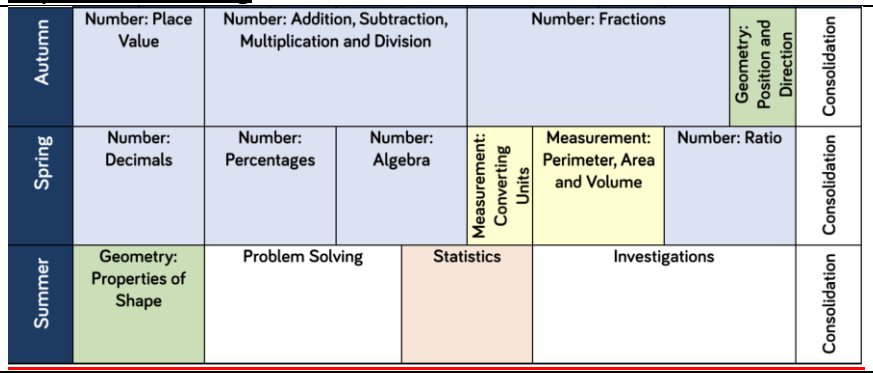
Year 5

Term	Unit of Study	Key Skills Learning
Yearly	Breath of study: Maths	
Autumn Term	Number- Place Value Number- Addition & Subtraction Statistics Number- Multiplication & Division Measurement- Perimeter & Area	Count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000 Count forwards or backwards with positive and negative whole numbers; including though zero Read, write (order and compare) numbers to at least 1 000 000 and determine the value of each digit Read Roman numerals to 1 000 (M) and recognise years written in Roman numerals Read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit Interpret negative numbers in context Round any number to 1 000 000 and to the nearest 10, 100, 1 000, 10 000, 100 000 Solve number problems and practical problems involving rounding to 1 000 000 Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy Add and subtract whole numbers with more than 4 digits, including using formal written methods of column addition and subtraction Add and subtract numbers mentally with increasingly large numbers 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 and a combination of these, including understanding the meaning of the equal signs. 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 (non prime) numbers Establish whether a number up to 100 is prime and recall prime numbers up to 19 Recognise and use square numbers and cube numbers, and the notation for squared and cubed

		Multiply and divide numbers up to 4 digits by a one or two digits using long division/multiplication for two-digit numbers Multiply and divide numbers mentally drawing on known facts Multiply and divide whole numbers and decimals by 10, 100 and 1000 Solve problems involving multiplication and division, using knowledge of factors, multiples, squares and cubes. Solve problems involving multiplication and division, including scaling by fractions and ratios. Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres Calculate and compare the area of rectangles using standard units, square centimetres etc and estimate the area of an irregular shape. Estimate volume and capacity Complete, read and interpret information in tables, including timetables Solve comparison, sum and difference problems using information presented in a line graph
Spring Term	Number- Multiplication & Division Number – Fractions Number- Decimals & Percentages	Multiply and divide numbers up to 4 digits by a one or two digits using long division/multiplication for two-digit numbers Multiply and divide numbers mentally drawing on known facts Multiply and divide whole numbers and decimals by 10, 100 and 1000 Solve problems involving multiplication and division, using knowledge of factors, multiples, squares and cubes. Solve problems involving multiplication and division, including scaling by fractions and ratios. Solve problems involving addition, subtraction, multiplication and division- and a combination of these. Identify, name and write equivalent fractions of a given fraction, including 10ths and 100ths Recognise mixed numbers and improper fractions and converts from one to the other Compare and order fractions whose denominators are all multiples of the same number Add and subtract fractions with the same denominator and denominators that are multiple of the same number Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams Read and write decimal numbers as fraction Recognise and use thousandths and relate them to tenths, hundredth and decimal equivalents Round decimals with two decimal places to the nearest whole number and to one decimal place Read, write and order and compare numbers with up to three decimal places Recognise the percent symbol and understand that percent relates to 'number of parts per 100' Write percentages as a fraction with a denominator 100, and as a decimal Solve problems which require knowing percentage and decimal equivalents of $\frac{1}{2}$, $\frac{1}{4}$, 1/5, 2/5, 4/5 and those fractions with a denominator of a multiple of 10 or 25
Summer Term	Number – Decimals Geometry- Properties of Shape	Multiply and divide numbers up to 4 digits by a one or two digits using long division/multiplication for two-digit numbers

	Geometry- Position & Direction Measurement- Converting Units Measurement- Volume	Multiply and divide numbers mentally drawing on known facts Multiply and divide whole numbers and decimals by 10, 100 and 1000 Use common factors to simplify fractions, use common multiples to express fractions in the same denomination Compare and order fractions, including fractions > 1 Solve problems involving number up to three decimal places Convert between different units of metric measure 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 measures (length, height, mass volume etc) using decimal notation, including scales Use all four operations to solve problems involving measure e.g. money Solve problems involving converting between units of time Use, read write and convert between standard unit, converting measurements of time from smaller units of measure to larger ones and vice versa Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres Calculate and compare the area of rectangles using standard units, square centimetres etc and estimate the area of an irregular shape Estimate volume and capacity Distinguish between regular and irregular polygons based on reasoning about equal sides and angles. Use the properties of rectangles to deduce related facts and find missing lengths and angles Identify 3-D shapes, including cubes and other cuboids, from 2-D representations Know angles are measured in degrees; estimate and compare acute, obtuse and reflex angles Draw given angles, and measure them in degrees Identify angles at a point and one whole turn, on a straight line, half a turn and other multiplies of 90° 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

Year 6

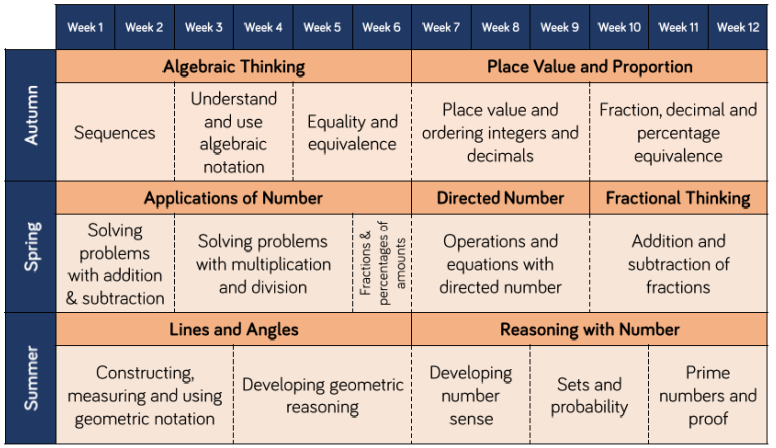
Term	Unit of Study	Key Skills Learning
Yearly	Breath of study: Maths	
Autumn Term	Number- Place Value Number – Addition, Subtraction, Multiplication & Division Number- Fractions Geometry- Position & Direction	Read, write (order and compare) numbers to at least 10 000 000 and determine the value of each digit Read, write, order and compare numbers to at least 10 000 000 and determine the value of each digit Round any number to the required degree of accuracy Use negative numbers in context, and calculate intervals across zero Solve number and practical problems involving rounding Perform mental calculations, including with mixed operations and large numbers Use their knowledge of the order of operations to carry out calculations involving the four operations Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why Identify common factors, common multiples and prime numbers Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy 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 digit by two digits using the short and long division methods, interpret remainders as whole numbers, fractions or by rounding as appropriate Perform mental calculations, including with mixed operations and large numbers Solve problems involving addition, subtraction, multiplication and division. Use their knowledge of order of operations to carry out calculations involving the four operations Add and subtract fractions with different denominators and mixed numbers using the concept of equivalent fractions Multiply some pairs of proper fractions writing the answer in the simplest form

		Divide proper fractions by whole numbers Recap how to use, read write and convert between standard unit, converting measurements of time from smaller units of measure to larger ones and vice versa Describe positions on the full coordinate grid in all four quadrants Draw and translate simple shapes on the coordinate plane, and reflect them in the axes
Spring Term	Number - Decimals Number – Percentages Number- Algebra Measurement- Converting Units Measurement- Perimeter, Area & Volume Number - Ratio	Identify the value of each digit in numbers given to three decimal places Multiply and divide numbers by 10, 100 and 1000 giving answers to 3 decimal places Multiply one- digit numbers with up to two decimal places by whole numbers Use written division methods in cases where the answer has up to two decimal places Solve problems which require answers to be rounded to specified degrees of accuracy Associate a fraction with division and calculate decimal fraction equivalents for a simple fraction e.g. 0.375 = 3/8 Recall and use equivalences between simple fractions, decimals and percentages including in different contexts Solve problems involving the relative sizes of two quantities where missing values can be found using multiplication and division facts Solve problems involving the calculation of percentages and the use of percentages for a comparison Solve problems involving similar shapes where the scale factor is know Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples Use simple formulae Generate and describe linear numbers sequences Express missing number problems algebraically Find pairs of number that satisfy an equation with tow unknowns Enumerate possibilities of combinations of two variables Solve problems involving calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate 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 up to three decimal places Convert between miles and kilometres Recognise tat shapes with the same areas can have different perimeters and vice versa Recognise when it is possible to use formulae for area and volume shapes. Calculate the area of parallelograms and triangles Calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres and cubic metres and extending to other units such as mm^3, cm^3
Summer Term	Geometry- Properties of Shape	Draw 2-D shapes using given dimensions and angles

	Problem Solving Statistics Investigations	Compare and classify geometric shapes based on their properties and sizes. Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius Recognise, describe and build simple 3-D shapes, including making nets 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 angles Interpret and construct pie charts and line graphs and use these to solve problems Calculate and interpret the mean as an average

Year 7

Term	Unit of Study	Key Skills Learning
Autumn Term		Understand and use place value Compare and order numbers Round to powers of 10 and 1 significant figure Write in standard form to 1 significant figure Interchange between fractions and decimals below 1 Explore fractions above 1 Interchange between fractions, decimals and percentages to 100% Function machines Algebraic notation Substitute into expressions Understand the difference between equality and equivalence Collecting like terms Form and solve one-step equations Represent functions graphically Recognise linear and non-linear sequences Generate sequences from an algebraic rule Find the median and the range
Spring Term		Use factors and multiples Order directed number Use the four operations with positive integers and decimals Use a calculator Multiply and divide by positive powers of 10

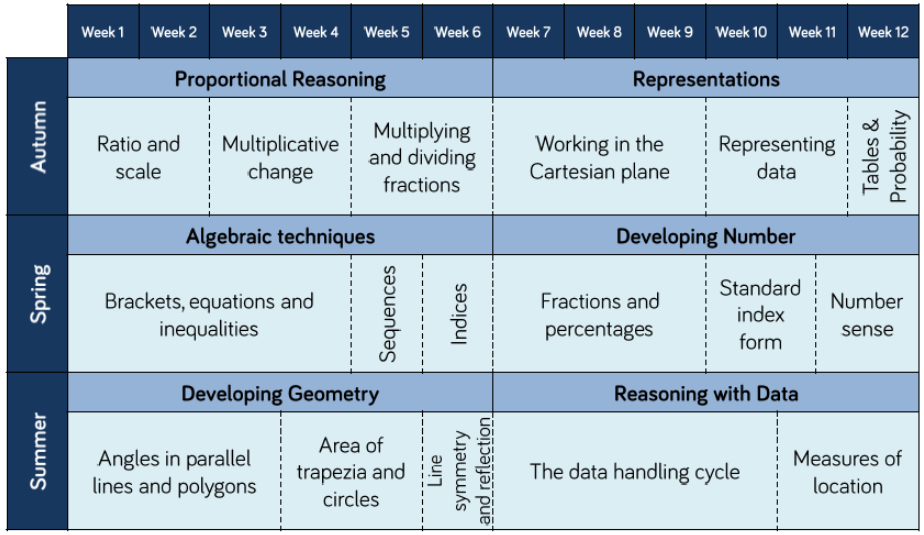


		Order of operations (BIDMAS) Multiply by 0.1 and 0.01 Use the four operations with directed number Add and subtract fractions including mixed numbers Find fractions of an amount (up to 1) Solve problems with fractions greater than 1 Find percentage of an amount using mental and calculator methods Revisit notation and substitution in relation to directed number Simple algebraic fractions Revisit collect like terms in the context of directed numbers. Form and solve two-step equations Convert metric units Solve perimeter problems Find the areas of rectangles, parallelograms and triangles Find the area of a trapezium Solve problems with line charts and bar charts Find the mean
Summer Term		Prime factorisation Highest common factors and lowest common multiples Explore related algebraic expression Use multiplicative relationships between known facts Geometric notation Draw lines, angles and simple shapes Parallel and perpendicular lines Name and construct polygons Properties of triangles and quadrilaterals Find angles at a point, adjacent angles on a straight line and vertically opposite angles Find unknown angles in a triangle and quadrilaterals Angles in parallel lines Simple angle proofs Use the language of probability Calculate simple probabilities Use the probability scale

		Use sample space diagrams Understand and use set notation including Venn diagrams and find the complement of a set Know the sum of probabilities is 1 Construct and interpret pie charts

Year 8

Term	Unit of Study	Key Skills Learning
Autumn Term		Multiply and divide fractions Multiply and divide mixed numbers Read and use conversion graphs Read and use direct proportion graphs Using coordinates Plotting graphs in the form: • y=k, x=k, • y= kx • y=x+a • y=mx+c Explore gradient Explore non-linear graphs Understand and use scale factors Use scale diagrams and maps Convert currency Use conversion and direct proportion graphs Understand and use ratio notation Divide in a ratio Work out parts and wholes as a ratio Use the form 1:n and n:1 in ration problems

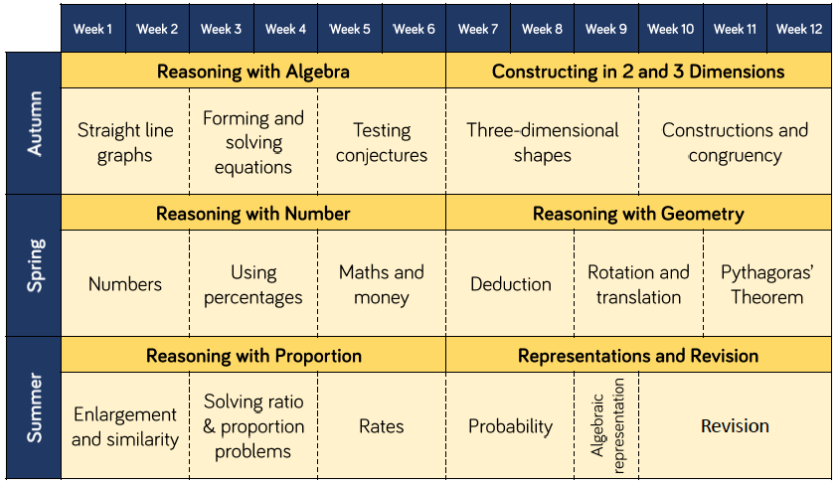


		Link gradient and ratio Find the circumference of a circle Work with scale factors Construct sample space diagrams for more than one event Use sample spaces to find probability Use tables and Venn diagrams to find probabilities Use the product rule for finding the total number of outcomes Recognise different types of data Construct and interpret frequency tables, grouped and ungrouped, and two way tables Read and draw scatter graphs, including line of best fit and identifying correlation
Spring Term		Revisit year 7 comparing and ordering Write number of any size in standard form Use negative and fractional indices Revisit year 7 rounding Round to given numbers, or decimal points, or standard form Revisit and extend year 7 work including: • Covert between units of time • Order of operations • Calculate with money • Use estimation Convert metric units of length and area Use error interval notation Express one number as a fraction of another Explore calculator and non calculator methods for fractions Solve percentage increase and decrease problems Use multipliers Express one quantity as a percentage of another Compare two quantities using percentages Work with percentages greater than 100% Find the original amount after a percentage change Work with indices Explore powers of powers Expand over a single bracket Simplify expression involving brackets Identify and use formulae, expressions, identities and equations Expand a pair of binomials (FOIL)

		Solve inequalities Form and solve equations with brackets Form and solve equations with inequalities with unknown on both sides Find the rule for the nth term of a linear sequence Covert area and volume measures
Summer Term		Find the area of a trapezium Find the area of a circle Find the area of compound shapes Recognise line symmetry Reflect shapes in a given line Standard ruler and compass constructions Explore diagonals of quadrilaterals Find unknown angles in parallel lines Find interior and exterior angles in polygons Explore angles formed by diagonals of quadrilaterals Find and prove simple geometric facts Collect data Read and use multiple bar charts and line graphs Identify misleading graphs Find the mode of a set of numbers Find outliers in data Compare distributions using statistical methods Find the mean form a grouped or ungrouped frequency table

Year 9

Term	Unit of Study	Key Skills Learning
Autumn Term		Revise and extend year 7 and 8 algebra content Rearrange to the form y=mx+c Change the subject of a formula (extend to more complex formulas) Testing algebraic conjectures Expand a pair of binomials (FOIL), extend to three brackets Form and solve equations and inequalities with unknowns on both sides Simplify, use and interpret y=mx+c Solve problems involving parallel lines Solve simultaneous equations graphically Explore perpendicular lines Testing conjectures about sequences Revisit scale drawings Find the surface area of cuboids and cylinders Find the volume of cuboids, cylinders and other prisms Extend to finding the volume of cones, spheres and compound shapes Surface area of prisms Standard ruler and compass constructions Loci Testing conjectures about shapes Identify properties of 3D shapes Identify 2D shapes in 3D shapes



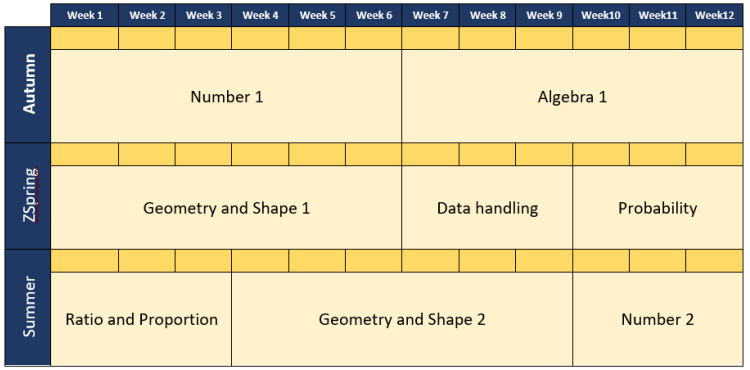
		Explore congruency
Spring Term		Revisit fraction arithmetic Revisit and extend year 7 and 8 work in the context of financial mathematics Revise and extend year 7 and 8 fraction work Revise year 7 and 8 percentage work Solve reverse percentage problems Solve repeated change percentage problems Revise year 7 and 8 percentage work Solve problems involving repeated percentage change Recognise rotational symmetry Rotate points around a given point Translate shapes and describe translations Extend to performing a series of transformations Revie year 7 and 8 angle facts and extend to chains of reasoning to find unknown angles Understand and use Pythagoras' Theorem- extend to using Pythagoras' Theorem in 3D shapes Prove that a triangle is or isn't right angled Explore proofs of Pythagoras' Theorem
Summer Term		Revise algebraic representation Understand and use the concepts and vocabulary of expressions, equations, inequalities, terms and factors. Represent inequalities Interpret graphs in various forms including quadratic, exponential, speed, distance, time Revision of sequences find the rule for the nth term of a linear sequence Revisit conversion graphs Solve direct and indirect proportion problems Solve inverse proportion problems and use inverse proportion graphs Solve speed, distance, time problems Solve density problems and understand what density is Converting compound measures Unit pricing problems- best buys Explore ratios in right angled triangles Compare experimental and theoretical probability Use frequency trees to find probabilities Use and read simple tree diagrams Revise year 7 and 8 work on representing and interpreting data

		Revision of KS3 topics – this will be specific to each class/cohorts areas of need.

Key Stage 4

During KS4 we teach a one-year GCSE and repeat it in both year 10 and 11, this allows the pupils to build up their knowledge and work on the grade 1 to 3 topics in year 10 (extending to year 4 on occasions) and revising the skills in year 11 and extending them to the grade 4 and 5 topics.

Term	**Unit of Study**	**Key Skills Learning**
Autumn Term	Number 1 Algebra 1	Odd and even numbers Prime numbers Factors and multiples Highest common factors – HCF Lowest common multiples- LCM Square and cube numbers and roots Index laws Standard form Place value Rounding to 10, 100, 1000, 1dp, 2dp and significant figures Directed number rules BIDMAS Coordinates Sequences Finding the nth term Function machines Collecting like terms Substitute into a formula, equation and expression Solving linear equations



		Factorising into a single bracket Multiply two brackets Quadratic factorisation Rearrange formulae Inequalities Straight line graphs Quadratic and cubic graphs
Spring Term	Geometry and Shape 1 Data Handling Probability	Properties of 2D & 3D shapes Plans & elevations Types of lines and angles Draw and measure lines and angles, Angles on a straight line Angles about a point Angles in triangles and quadrilaterals Interior and exterior angles of polygons Angles in parallel lines Bearings Congruency Similarity Geometric proof Constructions Transformations Tessellations Vectors Finding the mode, median, mean and range of a set of discrete data Averages from tables Tally charts Pictograms Bar charts Stem & Leaf diagrams Scatter graphs Pie charts Cumulative frequency and box plots Histograms Stratified sample

		Probability scale Mutually exclusive and exhaustive events Sample space Frequency trees Probability trees Relative frequency Two-way tables Venn diagrams & set notation
Summer Term	Ratio and Proportion Geometry and Shape 2 Number 2	Simplify ratios Divide an amount by a given ratio 3 way ratio problems Best buys Recipes Area & Perimeter of rectangles and triangles Area of compound shapes Area of trapeziums Volume of cuboids, cylinders and prisms Surface area of cuboids, cylinders and prisms Area of circles Circumference of circles Pythagoras' Theorem Trigonometry Reading scales, calendars and timetables Time calculations Speed distance and time Finding equivalent fractions Ordering fractions Convert between mixed numbers & top heavy fractions Adding & subtracting fractions Multiplying and dividing fractions Fractions of amounts Converting between fractions, decimals & percentages Recurring decimals Ordering fractions, decimals & percentages

		Percentage of amounts Percentage increase & decrease Percentage change Compound Interest and depreciation Reverse percentages

ENRICHMENT OPPORTUNITIES

Playing darts – uses addition, subtraction and multiplication
Playing snooker – adding up the score
Organising a family day out- look at costings, times of busses or trains, food costs.

HOW TO SUPPORT YOUR CHILD'S LEARNING

You can support your child's learning in maths by pointing out maths in everyday life:

- Read bus timetables, ask questions such as " how long until the next bus" or " how many minutes does it take the bus to get from Upperby Road to Lowther Street?"
- When shopping round the items to the nearest pound and estimate the total of the shopping. As your child improves round to the nearest 50p or ask them to figure out how much change you will get .
- When baking or cooking look at the recipe together, discuss that if the recipe is for 4 people and you need to make it for 8 people what would you do with the measures?
- Ask your child the time, especially and analogue clock as they often find this more difficult than digital clocks.
- Focus on multiplication tables and ask questions regularly so that they are able to recall these basic facts quickly.
- Learn number bonds to 10, then 100 and then 1000.eg "What do I add to 36 to make 100?"

Most importantly be positive about maths. Try not to say things like "I cannot do maths" or "I hated maths at school"- your child may start to think like that themselves.

WHERE TO GO:

The puzzling place – Keswick
Science museums – The Science Museum in London has a whole gallery dedicated to maths
Bletchley Park Milton Keynes
Blenheim Palace – has a maths trail
Birmingham Botanical Gardens- has a maths trail
If you are lucky enough to go to New York they have MoMaths a maths museum.

WHAT TO WATCH:

Number blocks - https://www.youtube.com/channel/UCPlwvN0w4qFSP1FllALB92w
Cyber chase- https://www.youtube.com/results?search_query=cyberchase&sp=mAEB
Monster Maths Squad - https://www.youtube.com/channel/UCha_jVVIHfH-m_pGY8erN7w
Odd Squad

WHAT TO READ:

Here are some books that include maths in them:
The Curious Incident of the Dog in the Nighttime by Mark Hadden
The Number Devil – A mathematical adventure book by Hans Magnus Enzensberger
Multiplying Menace: The Revenge of Rumpelstiltskin (A Math Adventure) by Pam Calvert
Maths Curse by Jon Scieszka
The Cavern of Clues by David Glover
Circumference and the First round Table by Cindy Neuschwander
Alex's Adventures in Numberland by Alex Bellos
The Boy who Loved Maths by Paul Erdos
What's the Point of Maths by Dorling Kindersley

ONLINE:

White Rose Maths - https://whiterosemaths.com/
National Museum of Maths - https://momath.org/
Beamish has a maths online activity - https://www.beamish.org.uk/learning-activity/maths-at-the-museum-remote/
The Story of Maths - https://www.youtube.com/watch?v=pb0MSMGSIeY
Coolmaths.com
Mathplayground.com
Mathblaster- http://www.mathblaster.com/