

Strands	Autumn Term	Spring Term	Summer Term
Access	Convert words to numbers Tables up to 10x10 Simple divisibility tests Order numbers Multiply and divide by 10,100 Use time Use operations vocabulary	Complements Tables up to 10x10 Adding/subtracting using mental and written methods	Add fractions that are complementary to 1 Divide a shape into fractions Identify the fraction of a diagram that has been shaded Know the vocabulary of fractions Work out very simple fractions of amounts
	Using symbols/letters to represent unknowns in sums. Eg $4+7=\square$ $2+t=10$ Do lots of numeracy while beginning to understand the concept of a letter as an unknown.	Use letters as numbers and carry out basic substitution Use simple function machines	Use sequences as a way to practise numeracy Treat times tables as repeated addition Plot and read coordinates in the 1st quadrant
	Angle as turn Vocabulary of angles Recognise common 2D shapes Draw a circle	Understand what area means Work out area by counting squares Understand what perimeter means Work out perimeter by measuring or counting	Recognise reflection symmetry in simple shapes Make a diagram symmetrical
	Use tally charts to count and record data Use Venn and Carroll diagrams to sort and classify data Construct, use and interpret pictograms	Put a list of data in order, using a suitable method and identify the middle value Make statements to represent a set of data	Understand and use language of probability
A	Convert words to numbers Tables up to 12x12 Simple divisibility tests	Complements Tables up to 12x12 Adding/subtracting decimals using mental and	Percentage is a fraction out of 100 Add fractions with the same denominator Don't add fractions with different denominators
	Understand that letters can be used to represent unknowns Substitute into simple expressions to evaluate them	Use function machines to make algebraic statements Use function machines to create inverse functions	Continue and describe sequences and fill in gaps Plot points in all 4 quadrants
	Estimate, draw and measure angles accurately Angles on a straight line Different nets of a cube	Understand what area means Work out area by counting squares The formula for the area of a rectangle	Recognise reflections symmetry, draw mirror lines and complete a diagram Reflect in vertical/horizontal lines
	Write simple research questions Know the vocabulary - primary data and secondary data Design and use simple data collection sheets, including tally charts Construct, use and interpret bar charts	Find the mode, median and range of an odd numbered set of data Make comparisons between two sets of data by reference to their modes, medians and ranges	Understand and use language of probability Draw a probability scale

B	Order decimals Order of operations (BIDMAS) Add/subtract and use negative numbers Factors, multiples, LCM and HCF	Multiplication methods Division methods Rounding to decimal places Word problems with multiplication and division	Find equivalent fractions Simplify fractions Represent fractions on a numberline Add/subtract fractions Order fractions Find common denominators Convert decimals to fractions Find equivalent ratios Divide an amount in a ratio
	Use expressions as shorthand Form expressions Collect like terms (harder) Substitute into harder expressions to evaluate them	Play with equations to make new ones Solve equations using balancing	Treat a linear sequence as a shifted times table Create sequences from physical situations Solve problems by plotting points in 4 quadrants Begin to make links between lines on a graph and algebraic rules
	Angles at a point Angles in a triangle Vertically opposite angles Vocabulary of 3D shapes Isometric drawings Use ruler/compasses/protractor to draw SAS, ASA, SSS triangles	Work out missing lengths on compound rectilinear shapes Calculate area of parallelograms Calculate area of triangles Work on perimeter and area together	Reflect in diagonal lines Carry out rotations Use a centre of rotation, direction and angle
	Write a simple hypothesis Know the vocabulary - qualitative and quantitative data. Construct, use and interpret simple line graphs Compare bar charts by describing their shape and making inferences Construct, use and interpret grouped bar charts Construct Stem and Leaf diagrams	Be able to calculate the mean of a set of discrete data Be able to find the mode, median and range for even numbered sets of data Be able to work backwards by re-creating the data set given its mean, mode, median and range	Understand what is meant by equally likely Use fractions to describe probability Use experimental probability in simple cases
C	Calculate metric conversions Multiply and divide decimals, including by 0.1 Multiply and divide negatives Identify prime numbers	Convert metric to and from imperial measurements Convert within the imperial system, knowing the conversions Estimate measurements Use a calculator correctly Functional maths	Change between improper fractions and mixed numbers Work out a fraction of an amount (unitary method) Convert between percent and fractions Find a percentage increase/decrease/of Compare ratios (unitary method) Ratio problems (unitary method)

	<p>Know the meaning of the vocabulary associated with algebra</p> <p>Form expressions from physical situations</p> <p>Expand single terms across brackets</p> <p>Collect like terms (including x-squared)</p> <p><u>Substitute into formulae</u></p>	<p>Solve equations using balancing</p> <p>Form equations for particular situations</p> <p>Rearrange simple formulae</p>	<p>Find nth term</p> <p>Generate sequences from the nth term</p> <p>Know what each part of the nth term rule means/does</p> <p>Draw graphs from tables of values</p> <p><u>Make links to $y=mx+c$</u></p>
	<p>Identify and calculate using alternate and corresponding angles</p> <p>Proof for angles in a triangle</p> <p>Calculate the interior/exterior angles in polygons</p> <p>Elevations/views</p> <p>Understand the properties of 2D shapes</p> <p>Construct: midpoint, perp bisector, angle bisector</p>	<p>Calculate the area of a trapezium</p> <p>Work out the area of compound shapes</p> <p>Problem-solve to work out other areas</p> <p>Use proof with the area of a trapezium</p> <p>Work out circumference and area of a circle</p>	<p>Translate shapes using vectors</p> <p>Enlargements (positive integer scale factors)</p> <p>Combine several transformations</p>
	<p>Know and understand the data handling cycle ie: be able to draw and label the cycle correctly</p> <p>Design and use questionnaires</p> <p>Be able to criticise and improve poorly designed questionnaires</p> <p>Construct, use and interpret pie charts</p>	<p>Be able to find the MMR from tabled but ungrouped data</p> <p>Be able to find the mode, median and range from a stem and leaf diagram</p> <p>Understand the pros/cons of each average and when each should be used</p> <p>Be able to use the MMR appropriately to make <u>comparisons between sets of data</u></p>	<p>Use Carroll diagrams, sample space diagrams and <i>possibility trees</i> to list outcomes of two events systematically</p> <p>Design and use two way tables</p> <p>Understand that the probabilities of mutually exclusive events add up to 1.</p>
D	<p>Write powers of 10 as indices and be able to carry out multiplication/division of indices</p> <p>Raise numbers to the power of zero</p> <p>Know squares, cubes and square roots</p> <p>Product of primes, HCF and LCM</p> <p><u>Related calculations</u></p>	<p>Rounding to significant figures</p> <p>Using calculator functions</p> <p>Giving answers to appropriate degree of accuracy</p>	<p>Multiply fractions</p> <p>Calculate fractions of amounts</p> <p>Divide fractions</p> <p>Reciprocals</p> <p>Percentage increase/decrease and inverse percentages</p>
	<p>Expand expressions with a single pair of brackets</p> <p>Factorise into single brackets</p> <p>Substitute into expressions, adhering to BIDMAS</p> <p>Simplify expressions by writing terms in index notation</p>	<p>Solve equations with brackets and simple fractions</p> <p>Calculate with inequalities</p> <p>Use trial and improvement</p>	<p>Turn practical problems into algebraic sequences</p> <p>Extend understanding of proof and justification</p> <p>Explore sequences that are not linear, including Fibonacci, triangular numbers, repeated doubling, Pascal's triangle, etc</p> <p>Use flow charts to make sequences</p> <p>Solve simultaneous equations graphically</p> <p>Use graphs with direct proportion and for real-life situations</p>

	<p>Bearings - in full (measuring, drawing, calculating, solving problems)</p> <p>Pythagoras - in full</p> <p>More difficult constructions</p> <p>Locus - in full</p>	<p>Work out the radius if given the area or circumference of a circle</p> <p>Write answers in terms of pi</p> <p>Calculate the volume of a cylinder, cuboid, prism</p> <p>Work out the surface area of a prism</p>	<p>Enlargements with fractional and negative scale factors</p> <p>Find centre of enlargement and scale factor from the object and image</p> <p>Scale drawings and maps</p>
	<p>Write hypotheses about the expected relationship between two variables</p> <p>Understand the difference between discrete and continuous data</p> <p>Design and use a data collection sheet, appropriate for the type of data to be collected</p> <p>Construct, use and interpret scatter graphs</p>	<p>Be able to identify the bounds of intervals and understand why continuous data needs to be grouped</p> <p>Be able to find the estimated mean and modal grouping from tabled grouped data</p>	<p>Understand relative frequency and use it to make predictions</p>
E	<p>What is standard form?</p> <p>Converting numbers between standard form and ordinary</p> <p>Calculating with standard form (with a calc and without)</p> <p>Solving problems with standard form</p> <p>Negative indices (with a numerical and/or an algebraic base)</p>	<p>Compound measures, including speed and density</p> <p>Checking answers using different methods</p> <p>Not rounding prematurely</p> <p>Upper and lower bounds</p>	<p>Recurring decimals to fractions</p> <p>Percentage in real life situations, including compound interest</p> <p>Exponential growth/decay</p>
	<p>Expand pairs of linear brackets</p> <p>Factorise quadratic expressions where a=1</p> <p>Know when to factorise into one bracket or into a pair of brackets</p> <p>Solve quadratic equations using factorising where a=1</p> <p>Recognise the difference of two squares and perfect squares</p> <p>Use factorisation to simplify algebraic fractions</p>	<p>Solve linear equations involving fractions</p> <p>Solve simultaneous equations using elimination</p> <p>Rearrange formulae that involve fractions</p>	<p>Carry out an investigation and produce a justification</p> <p>Find the equation of straight lines in real situations</p> <p>Know about the link between two graphs that are perpendicular to each other</p> <p>Learn 3D coordinates</p> <p>Solve 2D inequalities graphically</p> <p>Solve quadratics graphically</p>
	<p>Trigonometry in right-angled triangles - in full</p>	<p>Work out the area of a sector of a circle</p> <p>Work out the length of an arc and the perimeter of a sector</p> <p>Calculate the surface area of a cylinder</p> <p>Convert between metric units of area, volume and capacity</p>	<p>Congruent shapes</p> <p>Proof with congruent triangles</p> <p>Similar shapes</p>

	<p>Construct, use and interpret frequency diagrams – be able to describe the differences between a bar chart and a frequency diagram</p> <p>Construct, use and interpret back-to-back stem and leaf diagrams – be able to state the advantages and disadvantages of a stem and leaf over a bar chart/frequency diagram</p> <p>Construct, use and interpret box plots from raw data and stem and leaf</p> <p>Select appropriate graphs to represent different types of data</p>	<p>Understand the concept of cumulative frequency and its uses</p> <p>Construct, use and interpret cumulative frequency curves</p> <p>Derive box plots from cumulative frequency curves</p>	<p>Use probability trees to find the probability of different combinations of outcomes</p> <p>Use the AND rule and the OR rule for calculating probabilities</p>
F	<p>Indices with fractional powers</p> <p>Solving problems with all indices laws</p> <p>Know what a surd is</p> <p>Simplify expressions with surds (including rationalising a denominator)</p> <p>Leave answers in surd form</p>	<p>Work out upper and lower bounds of calculations</p>	<p>Direct, inverse proportion</p> <p>Proportional to the square and inverse square</p> <p>Constant of proportionality</p> <p>Proportion and graphs</p>
	<p>Factorise quadratic expressions where a does not equal 1</p> <p>Solve quadratic equations using: factorising, completing the square and the quadratic formula</p> <p>Set up and solve quadratic equations from a physical problem (eg an L-shape made of two rectangles)</p> <p>Carry out calculations with algebraic fractions</p>	<p>Solve linear simultaneous equations using substitution</p> <p>Solve non-linear simultaneous equations, algebraically and graphically</p>	<p>Draw and interpret real-life graphs</p> <p>Draw and recognise important mathematical graphs</p> <p>Transform the graphs, and the graph of $y=f(x)$</p> <p>Solve non-linear simultaneous equations using graphs</p>
	<p>Circle theorems - in full</p> <p>Pythagoras and trigonometry in 3D</p> <p>Trigonometry without a right angle</p>	<p>Calculate the volume of a pyramid, cone and sphere</p> <p>Calculate the volume of a frustum of a cone</p> <p>Calculate the surface area of a cone and a sphere</p> <p>Work out the area of a segment of a circle</p> <p>Use proof in the surface area of a cone</p>	<p>Enlargements with length/area/surface area/volume</p> <p>Proof</p> <p>Everything with vectors</p>
	<p>Be able to select a sample, using a range of methods to include random, systematic and stratified sampling</p> <p>Be able to justify the selection of a sampling method listing its pros and cons</p>	<p>Construct, use and interpret histograms</p> <p>Construct, use and interpret frequency polygons</p> <p>Be able to describe a distribution by reference to skew</p>	<p>The rest of this time would be used as revision time prior to exams.</p>