



Mathematics curriculum overview KS3

Topic	1- Place value, application + - / x. Area of rectangles	2. Use and understand Algebraic notation. Sequences	3- fraction, decimal, percentage. Construction and geometric notation	4- Representing data, fraction, decimal percentage	5- Fraction. Prime numbers and proof. Geometry	6- Geometry. Probability. Equality and equivalence
Length of topic (in weeks)	6 weeks	7 weeks	6 weeks	6 weeks	6 weeks	7 weeks
Links to national curriculum	<p>* Consolidate their numerical and mathematical capability from key stage 2 and extend their understanding of the number system and place value to include decimals, fractions, powers and roots.</p> <p>use language and properties precisely to analyse numbers, algebraic expressions, 2-D and 3-D shapes, probability and statistics</p> <p>Order positive and negative integers, decimals and fractions; use the number line as a model for ordering of the real numbers; use the symbols =, ≠, <, >, ≤, ≥</p>	<p>Understand and use the concepts and vocabulary of expressions, equations, inequalities, terms and factors</p> <p>Use algebra to generalise the structure of arithmetic, including to formulate mathematical relationships</p> <p>use language and properties precisely to analyse numbers, algebraic expressions, 2-D and 3-D shapes, probability and statistics</p> <p>Generate terms of a sequence from either a term-to-term or a position-to-term rule</p> <p>Consolidate their numerical and mathematical capability from key stage 2 and extend their understanding of the number system and place value to include decimals, fractions, powers and roots</p> <p>use conventional notation for the priority of operations, including brackets, powers, roots and reciprocals</p> <p>Recognise and use relationships between operations including inverse operations</p>	<p>Consolidate their numerical and mathematical capability from key stage 2 and extend their understanding of the number system and place value to include decimals, fractions, powers and roots.</p> <p>interpret when the structure of a numerical problem requires additive, multiplicative or proportional reasoning</p> <p>Define percentage as ‘number of parts per hundred’, interpret percentages and percentage changes as a fraction or a decimal, interpret these multiplicatively, express 1 quantity as a percentage of another, compare 2 quantities using percentages, and work with percentages greater than 100%</p>	<p>Consolidate their numerical and mathematical capability from key stage 2 and extend their understanding of the number system and place value to include decimals, fractions, powers and roots</p> <p>Develop their mathematical knowledge, in part through solving problems and evaluating the outcomes, including multi-step problems</p> <p>Understand and use place value for decimals, measures and integers of any size</p>	<p>Select and use appropriate calculation strategies to solve increasingly complex problems.</p> <p>use language and properties precisely to analyse numbers, algebraic expressions, 2-D and 3-D shapes, probability and statistics</p> <p>Use the concepts and vocabulary of prime numbers, factors (or divisors), multiples, common factors, common multiples, highest common factor, lowest common multiple, prime factorisation, including using product notation and the unique factorisation property</p> <p>use the 4 operations, including formal written methods, applied to integers, decimals, proper and improper fractions, and mixed numbers, all both positive and negative</p>	<p>Use language and properties precisely to analyse numbers, algebraic expressions, 2-D and 3-D shapes, probability and statistics</p> <p>Draw and measure line segments and angles in geometric figures, including interpreting scale drawings</p> <p>Describe, sketch and draw using conventional terms and notations: points, lines, parallel lines, perpendicular lines, right angles, regular polygons, and other polygons that are reflectively and rotationally symmetric</p> <p>Use the standard conventions for labelling the sides and angles of triangle ABC, and know and use the criteria for congruence of triangles</p> <p>Record, describe and analyse the frequency of outcomes of simple probability experiments involving randomness, fairness, equally and unequally likely outcomes, using appropriate language and the 0-1 probability scale</p> <p>Understand that the probabilities of all possible outcomes sum to 1</p> <p>Enumerate sets and unions/intersections of sets systematically, using tables, grids and Venn diagrams</p>

Assessment Task(s)	End of block task	End of block task End of term assessment	End of block task	End of block task End of term assessment	End of block task	End of block task End of year assessment
Core Knowledge	<p>Work out intervals on a number line</p> <p>Position integers on a number line</p> <p>Round integers to the nearest power of ten</p> <p>Compare two numbers using =, ≠, <, >, ≤, ≥</p> <p>Order a list of integers</p> <p>Find the range of a set of numbers</p> <p>Find the median of a set of numbers</p> <p>Understand place value for decimals</p> <p>Round a number to 1 significant figure</p> <p>Write 10, 100, 1000 etc. as powers of 10 (H)</p> <p>Write positive integers in the form $A \times 10^n$ (H)</p> <p>Properties of addition and subtraction</p> <p>Use formal methods for addition of integers</p> <p>Use formal methods for addition of decimals</p> <p>Use formal methods for subtraction of integers</p> <p>Use formal methods for subtraction of decimals</p> <p>Choose the most appropriate method: mental strategies, formal written or calculator</p> <p>Solve financial maths problems</p> <p>Solve problems involving tables and timetables.</p> <p>Properties of multiplication & division</p> <p>Understand and use factors</p> <p>Understand and use multiples</p> <p>Multiply and divide integers and decimals by powers of 10</p>	<p>Use formal methods to multiply integers</p> <p>Use formal methods to multiply decimals</p> <p>Use formal methods to divide integers</p> <p>Use formal methods to divide decimals</p> <p>Understand and use order of operations</p> <p>Solve problems using the mean</p> <p>Use inverse operations to find the input given the output</p> <p>Use diagrams and letters to generalise number operations</p> <p>Use diagrams and letters with single function machines</p> <p>Find the function machine given a simple expression</p> <p>Substitute values into single operation expressions</p> <p>Find numerical inputs and outputs for a series of two function machines</p> <p>Use diagrams and letters with a series of two function machines</p> <p>Substitute values into two-step expressions</p> <p>Generate sequences given an algebraic rule</p> <p>Represent one- and two-step functions graphically</p> <p>Predict and check next term(s)</p> <p>Continue linear sequences</p> <p>Continue non-linear sequences</p> <p>Find missing terms (H)</p>	<p>Represent tenths and hundredths on number line</p> <p>Interchange between fractional and decimal number lines</p> <p>Convert between fractions and decimals - tenths and hundredths</p> <p>Convert between fractions and decimals - fifths and quarters</p> <p>Convert fluently between simple fractions, decimals and percentages</p> <p>Identify and use simple equivalent fractions</p> <p>Understand fractions as division</p> <p>Convert fluently between fractions, decimals and percentages</p> <p>Explore fractions above one, decimals and percentages (H)</p> <p>Draw and measure line segments including geometric figures</p> <p>Understand angles as a measure of turn</p> <p>Classify angles</p> <p>Measure angles up to 180°</p> <p>Draw angles up to 180°</p> <p>Draw and measure angles between 180° and 360°</p> <p>Recognise types of triangle – prove/show that</p> <p>Recognise types of quadrilateral– prove/show that</p> <p>Construct triangles using SSS</p> <p>Construct triangles using SSS, SAS and ASA</p> <p>Construct more complex polygons and Identify polygons up to a decagon</p> <p>Draw pie charts and Interpret simple pie charts using proportion. Interpret pie charts using a protractor</p>	<p>Draw and interpret scatter graphs, use a line of best fit and describe linear correlation</p> <p>Identify non-linear relationships</p> <p>Identify different types of data</p> <p>Read and interpret ungrouped frequency tables</p> <p>Read and interpret grouped frequency tables</p> <p>Construct and interpret two-way tables</p> <p>Find a fraction of a given amount</p> <p>Use a given fraction to find the whole and/or other fractions</p> <p>Find a percentage of a given amount using mental methods and with a calculator</p> <p>Understand and use representations of directed numbers</p> <p>Add directed numbers</p> <p>Subtract directed numbers</p> <p>Multiplication of directed numbers</p> <p>Multiplication and division of directed numbers</p> <p>Use a calculator for directed number calculations</p> <p>Evaluate algebraic expressions with directed number</p> <p>Introduction to two-step equations</p> <p>Solve two-step equations</p> <p>Use order of operations with directed numbers</p> <p>Roots of positive numbers (H)</p>	<p>Convert between mixed numbers and fractions.</p> <p>Add and subtract unit fractions with the same denominator</p> <p>Add and subtract fractions with the same denominator</p> <p>Add and subtract fractions from integers expressing the answer as a single fraction</p> <p>Understand and use equivalent fractions</p> <p>Add and subtract fractions where denominators share a simple common multiple</p> <p>Add and subtract fractions with any denominator</p> <p>Add and subtract improper fractions and mixed numbers.</p> <p>Use fractions in algebraic contexts</p> <p>Use equivalence to add and subtract decimals and fractions. Recognise square and triangular numbers</p> <p>Find common factors of a set of numbers including the HCF</p> <p>Find common multiples of a set of numbers including the LCM</p> <p>Write a number as a product of its prime factors</p> <p>Use a Venn diagram to calculate the HCF and LCM (H)</p> <p>Make and test conjectures</p> <p>Understand and use the sum of angles at a point</p> <p>Understand and use the sum of angles on a straight line</p> <p>Understand and use the equality of vertically opposite angles</p>	<p>Solve angle problems using properties of triangles and quadrilaterals</p> <p>Solve complex angle problems</p> <p>Find and use the angle sum of any polygon (H)</p> <p>Investigate angles in parallel lines (H)</p> <p>Understand and use parallel line angles rules (H)</p> <p>Use known facts to obtain simple proofs (H)</p> <p>Interpret and create Venn diagrams</p> <p>Understand and use the intersection of sets and use the union of sets</p> <p>Generate sample spaces for single events and calculate the probability of a single event</p> <p>Understand and use the probability scale and know that the sum of probabilities for all possible outcomes is 1</p> <p>Understand and use fact families, numerically and algebraically</p> <p>Solve one-step linear equations involving +/– using inverse operations</p> <p>Solve one-step linear equations involving \times/\div using inverse operations</p> <p>Understand the meaning of like and unlike terms</p>

Topic	Developing number sense. Brackets equations and inequality	2- fractions. Multiplicative change. The data handling cycle	3- Developing number sense. Working in the cartesian plane. Algebraic sequences. Tables and probability	4- Algebraic indices. Ratio, scale. Developing number, fractions and percentages	5-Standard index form. Geometry and symmetry. The data handling cycle part 2	6- Area of circles and trapezium. Measure of location and averages. Angles in lines and polygons
Length of topic (in weeks)	6 weeks	7 weeks	6 weeks	6 weeks	6 weeks	7 weeks
Links to national curriculum	<p>Use a calculator and other technologies to calculate results accurately and then interpret them appropriately. use scale factors, scale diagrams and maps.</p> <p>Use ratio notation, including reduction to simplest form.</p> <p>Divide a given quantity into 2 parts in a given part:part or part:whole ratio; express the division of a quantity into 2 parts as a ratio.</p>	<p>Use a calculator and other technologies to calculate results accurately and then interpret them appropriately</p> <p>Generate theoretical sample spaces for single and combined events with equally likely, mutually exclusive outcomes and use these to calculate theoretical probabilities</p>	<p>Substitute values in expressions, rearrange and simplify expressions, and solve equations</p> <p>Use language and properties precisely to analyse numbers, algebraic expressions, 2-D and 3-D shapes, probability and statistics</p> <p>Use and interpret algebraic notation, including: ab in place of $a \times b$, $3y$ in place of $y + y + y$ and $3 \times y$, a^2 in place of $a \times a$, a^3 in place of $a \times a \times a$; a^2b in place of $a \times a \times b$, a/b in place of $a \div b$, coefficients written as fractions rather than as decimals, brackets</p> <p>Substitute numerical values into formulae and expressions, including scientific formulae</p> <p>Simplify and manipulate algebraic expressions to maintain equivalence by: collecting like terms, multiplying a single term over a bracket, taking out common factors.</p> <p>Use algebraic methods to solve linear equations in 1 variable (including all forms that require rearrangement)</p> <p>Recognise geometric sequences and appreciate other sequences that arise</p>	<p>Use integer powers and associated real roots (square, cube and higher), recognise powers of 2, 3, 4, 5 and distinguish between exact representations of roots and their decimal approximations</p> <p>Interpret and compare numbers in standard form $A \times 10^n$ $1 \leq A < 10$, where n is a positive or negative integer or 0</p> <p>Use standard units of mass, length, time, money and other measures, including with decimal quantities</p> <p>Round numbers and measures to an appropriate degree of accuracy [for example, to a number of decimal places or significant figures]</p> <p>Change freely between related standard units [for example time, length, area, volume/capacity, mass]</p>	<p>Use a calculator and other technologies to calculate results accurately and then interpret them appropriately</p> <p>Work with coordinates in all 4 quadrants</p> <p>Calculate and solve problems involving: perimeters of 2-D shapes (including circles), areas of circles and composite shapes.</p> <p>Understand and use the relationship between parallel lines and alternate and corresponding angles.</p> <p>Derive and use the sum of angles in a triangle and use it to deduce the angle sum in any polygon, and to derive properties of regular polygons.</p>	<p>Explore what can and cannot be inferred in statistical and probabilistic settings, and begin to express their arguments formally</p> <p>Use a calculator and other technologies to calculate results accurately and then interpret them appropriately.</p> <p>Describe, interpret and compare observed distributions of a single variable through: appropriate graphical representation involving discrete, continuous and grouped data; and appropriate measures of central tendency (mean, mode, median) and spread (range, consideration of outliers).</p> <p>Construct and interpret appropriate tables, charts, and diagrams, including frequency tables, bar charts, pie charts, and pictograms for categorical data, and vertical line (or bar) charts for ungrouped and grouped numerical data.</p> <p>Describe simple mathematical relationships between 2 variables (bivariate data) in observational and experimental contexts and illustrate using scatter graphs</p>

Assessment Task(s)	End of block task	End of block task End of term assessment	End of block task	End of block task End of term assessment	End of block task	End of block task End of year assessment
Core Knowledge	<p>Know and use mental addition and subtraction strategies for integers</p> <p>Known and use mental multiplication and division strategies for integers</p> <p>Know and use mental arithmetic strategies for decimals</p> <p>Know and use mental arithmetic strategies for fractions</p> <p>Use estimation as a method for checking mental calculations</p> <p>Use known algebraic facts to derive other facts</p> <p>Form algebraic expressions</p> <p>Use directed number with algebra</p> <p>Multiply out a single bracket</p> <p>Factorise into a single bracket</p> <p>Expand a pair of binomials- GRID METHOD ONLY (H)</p> <p>Solve equations, including with brackets- BAR MODEL</p> <p>Form and solve equations with brackets – complete support test here.</p> <p>Understand and solve simple inequalities</p> <p>Form and solve inequalities</p> <p>Solve equations and inequalities with unknowns on both sides (H)</p> <p>Form and solve equations and inequalities with unknowns on both sides (H)</p> <p>Identify and use formulae, expressions, identities and equations – Complete core</p>	<p>Multiply a fraction by an integer</p> <p>Find the product of a pair of unit fractions and the product of a pair of any fractions</p> <p>Divide an integer by a fraction and divide a fraction by a unit fraction</p> <p>Divide any pair of fractions including improper</p> <p>Multiply and divide improper and mixed fractions</p> <p>Solve problems involving direct proportion</p> <p>Explore conversion graphs and direct proportion</p> <p>Convert between currencies graphs (H)</p> <p>Explore relationships between similar shapes and use scale factors as multiplicative representations</p> <p>Draw and interpret scale diagrams and interpret maps using scale factors and ratios</p> <p>Draw and interpret pie charts</p> <p>Draw and interpret line graphs</p> <p>Choose the most appropriate diagram for a given set of data</p> <p>Identify misleading</p>	<p>Round numbers to a given number of decimal places</p> <p>Estimate the answer to a calculation</p> <p>Calculate using the order of operations</p> <p>Solve problems involving time and the calendar</p> <p>Work with coordinates in all four quadrants</p> <p>Identify and draw lines that are parallel to the axes</p> <p>Recognise and use the line $y=x$ and use lines of the form $y=kx$</p> <p>Link $y=kx$ to direct proportion problems</p> <p>Explore the gradient of the line $y=kx$ (H)</p> <p>Explore graphs with negative gradient ($y=-kx$, $y=a-x$, $x+y=a$)</p> <p>Link graphs to linear sequences</p> <p>Plot graphs of the form $y=mx+c$</p> <p>Generate sequences given a rule in words</p> <p>Generate sequences given a simple algebraic rule</p> <p>Generate sequences given a complex algebraic rule</p> <p>Find the rule for the nth term of a linear sequence (H)</p> <p>Construct sample spaces for one or more events</p> <p>Find probabilities from a sample space</p> <p>Find probabilities from two-way tables</p>	<p>Adding and subtracting expressions with indices</p> <p>Simplifying algebraic expressions by multiplying indices and using the addition law for indices</p> <p>Simplifying algebraic expressions by dividing indices and using the subtraction law for indices</p> <p>Understand the meaning and representation of ratio and using ratio notation</p> <p>Solve problems involving ratios of the form $1 : n$ (or $n : 1$) and solve problems involving ratios of the form $m : n$ and Express ratios in the form $1 : n$ (H)</p> <p>Divide in a given ratio</p> <p>Express ratios in their simplest integer form</p> <p>Compare ratios and fractions</p> <p>Understand pi as a ratio</p> <p>Convert fluently between key fractions decimals and percentages</p> <p>Calculate key fractions, decimals and percentages of an amount without a calculator</p> <p>Calculate fractions, decimals and percentages of an amount using calculator methods</p> <p>Calculate percentage increase and decrease using a multiplier</p> <p>Express one number as a fraction or a percentage of another without a calculator and with a calculator methods</p> <p>Work with percentage change</p> <p>Choose appropriate methods</p>	<p>Work with numbers greater than 1 in standard form</p> <p>Work with numbers between 0 and 1 in standard form</p> <p>Add and subtract numbers in standard form</p> <p>Multiply and divide numbers in standard form</p> <p>Reflect a shape in a horizontal or vertical line 1 (shapes touching and not touching the line)</p> <p>Reflect a shape in a diagonal line 1 (shapes touching and not touching the line)</p> <p>Set up a statistical enquiry</p> <p>Design and criticise questionnaires</p> <p>Draw and interpret multiple bar charts</p> <p>Represent and interpret grouped quantitative data</p> <p>Compare distributions using charts</p> <p>Calculate the area of triangles, rectangles and parallelograms</p> <p>Calculate the area of a trapezium</p> <p>Calculate the perimeter and area of compound shapes (1)</p>	<p>Calculate the area of a circle and parts of a circle without a calculator</p> <p>Calculate the area of a circle and parts of a circle with a calculator</p> <p>Calculate the perimeter and area of compound shapes (2)</p> <p>Understand and use the mean, median and mode</p> <p>Find the mean from an ungrouped frequency table (H)</p> <p>Find the mean from an grouped frequency table (H)</p> <p>Compare distributions using averages and the range and stem and leaf diagrams</p> <p>Investigate angles between parallel lines and the transversal</p> <p>Identify and calculate with alternate and corresponding angles</p> <p>Identify and calculate with co-interior, alternate and corresponding angles</p> <p>Solve complex problems with parallel line angles</p> <p>Constructions triangles and special quadrilaterals</p> <p>Investigate the properties of special quadrilaterals</p> <p>Identify and calculate with sides and angles in special quadrilaterals</p> <p>Understand and use the sum of exterior angles of any polygon</p> <p>Understand and use the sum of the interior angles in any polygon</p> <p>Construct an angle and line bisector (H)</p>

Topic	1- numbers, using percentages. Straight line graphs	2- Dimensional shapes. Forming and solving equations	3- Maths and money. Construction and congruency. Vectors	4- Transformations. Ratio and proportion. Pythagoras	5- Reasoning with Proportion/enlargement and similarity. Algebraic representation	6- Reasoning with Geometry. Testing conjectures
Length of topic (in weeks)	6 weeks	7 weeks	6 weeks	6 weeks	6 weeks	7 weeks
Links to national curriculum	<p>Move freely between different numerical, algebraic, graphical and diagrammatic representations [for example, equivalent fractions, fractions and decimals, and equations and graphs]</p> <p>Use language and properties precisely to analyse numbers, algebraic expressions, 2-D and 3-D shapes, probability and statistics. Identify variables and express relations between variables algebraically and graphically.</p> <p>Make and test conjectures about patterns and relationships; look for proofs or counter-examples.</p> <p>Begin to reason deductively in geometry, number and algebra, including using geometrical constructions.</p> <p>Develop their use of formal mathematical knowledge to interpret and solve problems, including in financial mathematics.</p> <p>Begin to model situations mathematically and express the results using a range of formal mathematical representations.</p> <p>Select appropriate concepts, methods and techniques to apply to unfamiliar and non-routine problems.</p>	<p>Use language and properties precisely to analyse numbers, algebraic expressions, 2-D and 3-D shapes, probability and statistics. Use a calculator and other technologies to calculate results accurately and then interpret them appropriately.</p> <p>Use the properties of faces, surfaces, edges and vertices of cubes, cuboids, prisms, cylinders, pyramids, cones and spheres to solve problems in 3-D</p> <p>Interpret mathematical relationships both algebraically and geometrically</p>	<p>Use language and properties precisely to analyse numbers, algebraic expressions, 2-D and 3-D shapes, probability and statistics.</p> <p>Work interchangeably with terminating decimals and their corresponding fractions.</p> <p>Use a calculator and other technologies to calculate results accurately and then interpret them appropriately.</p> <p>Appreciate the infinite nature of the sets of integers, real and rational numbers.</p>	<p>Use language and properties precisely to analyse numbers, algebraic expressions, 2-D and 3-D shapes, probability and statistics. Use a calculator and other technologies to calculate results accurately and then interpret them appropriately.</p> <p>Derive and apply formulae to calculate and solve problems involving: perimeter and area of triangles, parallelograms, trapezia, volume of cuboids (including cubes) and other prisms (including cylinders).</p> <p>Derive and use the standard ruler and compass constructions (perpendicular bisector of a line segment, constructing a perpendicular to a given line from/at a given point, bisecting a given angle); recognise and use the perpendicular distance from a point to a line as the shortest distance to the line.</p> <p>Derive and illustrate properties of triangles, quadrilaterals, circles, and other plane figures [for example, equal lengths and angles] using appropriate language and technologies.</p>	<p>Use language and properties precisely to analyse numbers, algebraic expressions, 2-D and 3-D shapes, probability and statistics. Extend and formalise their knowledge of ratio and proportion in working with measures and geometry, and in formulating proportional relations algebraically.</p> <p>Use a calculator and other technologies to calculate results accurately and then interpret them appropriately.</p> <p>Recognise arithmetic sequences and find the nth term.</p> <p>Express 1 quantity as a fraction of another, where the fraction is less than 1 and greater than 1.</p> <p>Understand that a multiplicative relationship between 2 quantities can be expressed as a ratio or a fraction.</p>	<p>Develop algebraic and graphical fluency, including understanding linear and simple quadratic functions.</p> <p>Use language and properties precisely to analyse numbers, algebraic expressions, 2-D and 3-D shapes, probability and statistics. Use a calculator and other technologies to calculate results accurately and then interpret them appropriately.</p> <p>Recognise, sketch and produce graphs of linear and quadratic functions of 1 variable with appropriate scaling, using equations in x and y and the Cartesian plane.</p> <p>Interpret mathematical relationships both algebraically and graphically.</p> <p>Use linear and quadratic graphs to estimate values of y for given values of x and vice versa and to find approximate solutions of simultaneous linear equations.</p>

Links to national curriculum	Use approximation through rounding to estimate answers and calculate possible resulting errors expressed using inequality notation $a < x < b$ Use a calculator and other technologies to calculate results accurately and then interpret them appropriately. Expanding products of 2 or more binomials. Understand and use standard mathematical formulae; rearrange formulae to change the subject. Model situations or procedures by translating them into algebraic expressions or formulae and by using graphs. Reduce a given linear equation in 2 variables to the standard form $y = mx + c$; calculate and interpret gradients and intercepts of graphs of such linear equations numerically, graphically and algebraically. Solve problems involving direct and inverse proportion, including graphical and algebraic representations. Use compound units such as speed, unit pricing and density to solve problems.		Solve problems involving percentage change, including: percentage increase, decrease and original value problems and simple interest in financial mathematics.	Identify properties of, and describe the results of, translations, rotations and reflections applied to given figures. Use Pythagoras' Theorem and trigonometric ratios in similar triangles to solve problems involving right-angled triangles	Relate the language of ratios and the associated calculations to the arithmetic of fractions and to linear functions. Identify and construct congruent triangles, and construct similar shapes by enlargement, with and without coordinate grids. Apply angle facts, triangle congruence, similarity and properties of quadrilaterals to derive results about angles and sides, including Pythagoras' Theorem, and use known results to obtain simple proofs.	Find approximate solutions to contextual problems from given graphs of a variety of functions, including piece-wise linear, exponential and reciprocal graphs
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Assessment Task(s)	End of block task	End of block task End of term assessment	End of block task	End of block task End of term assessment	End of block task	End of block task End of year assessment
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Core Knowledge	<p>Integers, real and rational numbers and understand and use surds (H)</p> <p>Work with directed number (R)</p> <p>Solve problems with integers and decimals HCF and LCM (R)</p> <p>Adding and subtracting fractions (R) and Multiplying and dividing fractions (R)</p> <p>Numbers in standard form (R)</p> <p>Use the equivalence of fractions, decimals and percentages (R)</p> <p>Calculate percentage increase and decrease (R)</p> <p>Express a change as a percentage and solve problems with repeated percentage change (H)</p> <p>Solve reverse percentage problems</p> <p>Recognise and solve percentage problems (non-calculator)</p> <p>Recognise and solve percentage problems (calculator)</p> <p>Lines parallel to the axis, $y=x$ and $y=-x$ (R) and use tables of values (R)</p> <p>Compare gradients and intercepts</p> <p>Understand and use $y=mx+c$</p> <p>Write an equation in the form $y=mx+c$ (H)</p> <p>Find the equation of a line from a graph</p>	<p>Know names of 2D and 3D shapes</p> <p>Recognise prisms (including language of edges and vertices)</p> <p>Accurate nets of cuboids and other 3D shapes including sketch and recognise nets of cuboids and other 3D shapes</p> <p>Plans and elevations</p> <p>Surface area of cubes and cuboids</p> <p>Surface area of triangular prisms</p> <p>Surface area of a cylinder</p> <p>Volume of cubes and cuboids</p> <p>Volume of other 3D shapes - prisms and cylinders</p> <p>One and two-step equations and inequalities (R)</p> <p>Equations and inequalities with</p>	<p>Solve problems with bills and bank statements</p> <p>Calculate simple interest</p> <p>Calculate compound interest</p> <p>Solve problems with Value Added Tax</p> <p>Calculate wages and taxes</p> <p>Solve problems with exchange rates</p> <p>Solve unit pricing problems</p> <p>Draw and measure angles (R)</p> <p>Construct and interpret scale drawings (R)</p> <p>Locus of distance from a point and Locus equidistant from two points</p> <p>Locus of distance from a straight line</p> <p>Construct a perpendicular bisector and from a point</p> <p>Construct a perpendicular to a point</p> <p>Locus of distance from two lines and an angle bisector</p>	<p>Rotate a shape about a point on a shape</p> <p>Rotate a shape about a point not on a shape</p> <p>Translate points and shapes by a given vector</p> <p>Compare rotation and reflection of shapes</p> <p>Find the result of a series of transformations (H)</p> <p>Solve problems with direct proportion (R)</p> <p>Direct proportion and conversion graphs (R)</p> <p>Solve problems with inverse proportion</p> <p>Graphs of inverse relationships (H)</p> <p>Solve ratio problems given the whole or a part (R)</p> <p>Solve best buy problems</p> <p>Determine whether a triangle is right-angled $a^2 + b^2 = c^2$-investigate</p> <p>Calculate the hypotenuse of a right-angled triangle</p>	<p>Solve speed, distance and time problems without a calculator</p> <p>Solve speed, distance and time problems with a calculator</p> <p>Use distance-time graphs</p> <p>Solve problems with density, mass and volume</p> <p>Solve flow problems and their graphs</p> <p>Recognise enlargement and similarity</p> <p>Enlarge a shape by a positive integer scale factor</p> <p>Enlarge a shape by a positive integer scale factor from a point</p> <p>Enlarge a shape by a positive fractional scale factor</p> <p>Explore ratios in right-angled triangles (H)</p> <p>Draw and interpret quadratic graphs</p> <p>Interpret graphs, including reciprocal and piece-wise</p> <p>Represent inequalities</p> <p>Relative frequency - including</p>	<p>Use tree diagrams (H)</p> <p>Use diagrams to work out probabilities</p> <p>Angles in parallel lines (R)</p> <p>Solve angle problems using chains of reasoning</p> <p>Angle problems with algebra</p> <p>Factors, multiples and primes (R)</p> <p>True or false</p> <p>Always, sometimes, never true</p> <p>Show that</p> <p>Conjectures about number</p> <p>Expand a pair of binomials</p> <p>Conjectures with algebra</p> <p>Explore the 100 grid</p> <p>Expand three binomials (H)</p>
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Diagnostic feedback to take place at the end of each block of work.

Enrichment:

Homework club runs weekly at Lunch time to help with any homework difficulties or offer support.

Games club runs on weekly at lunchtime, it is a mixture of puzzle games, card games and games on the PCs.



Mathematics curriculum overview KS4

Topic	1- Representation of solutions and equations. Congruency, similarity and enlargement	2- Simultaneous equations. Ratios and fractions	3- Percentage and interest. Angles and bearings. Trigonometry	4- Trigonometry co nt. Non calculator methods. Probability.	5- Types of number. Collecting and representing data.	6- manipulating expressions. Working with circles. Indices.
Length of topic (in weeks)	6 weeks	7 weeks	6 weeks	6 weeks	6 weeks	7 weeks
Links to specification	Geometry and measures – Use Pythagoras’ Theorem and trigonometric ratios in similar triangles to solve problems involving right angled triangles	Algebra – Work with coordinates in all four quadrants	Number -Recognise and use relationships between operations including inverse operations. Geometry and measures – Use Pythagoras’ Theorem and trigonometric ratios in similar triangles to solve problems involving right angled triangles	Probability – Understand that the probabilities of all possible outcomes sum t 1o Number -Recognise and use relationships between operations including inverse operations Ratio, proportion and rates of change – Express one quantity as a fraction of another, where the fraction is less than 1 and greater than 1	Statistics – Describe simple mathematical relationships between two variables (bivariate data) in observational and experimental contexts and illustrate using scatter graphs.	Number -Recognise and use relationships between operations including inverse operations Algebra – Work with coordinates in all four quadrants
Core knowledge						
Assessment Task(s)	End of block task	End of block task GCSE Paper Assessment	End of block task	End of block task	End of block task	End of block task GCSE Paper Assessment
Key Knowledge	Congruency, similarity and enlargement, Trigonometry	Representing solutions of equations and inequalities. Simultaneous equations	Angles and bearings, Working with circles, Vectors	Ratio and fractions, Percentage and interest, Probability	Collecting, representing and interpreting data.	Non- calculator methods. Types of number and sequences, Indices and roots
Key Skills NUMBER ALGEBRA GEOMETRY RATIO PROBABILITY STATISTICS	Understand congruency and similarity. Enlarge shapes. Find missing lengths of similar shapes. Understand trigonometric ratios. Work out missing lengths and angles in right angled triangles.	Form and solve equations in a variety of contexts. Use number lines to solve and represent inequalities. Form and solve linear equations graphically. Form and solve linear equations algebraically. Understand some equations have multiple solutions.	Review KS3 angles. Understand bearings Review area and circumference. Calculate volume and surface area of cylinders and cones. Understand vector notation. Vector arithmetic add, subtract and multiply.	Use ratios in a variety of contexts. Combining ratio and fractions. Unit pricing. Convert fractions decimals and %. % change. Finding original values Review probability. Use tree diagrams... find probability from frequency tree and venn diagrams	Revisit all forms of statistical graphs and diagrams.	Use all four operations decimals, negatives and fractions. With and without context. Factors multiples and primes. Geometric and arithmetic sequences. Work out powers and roots. Use all index laws. Standard form.

Diagnostic feedback to take place at the end of each block of work.

Enrichment:

Topic	1- Expanding and factorising. Non-linear graphs. Geometric reasoning	2- Gradients and lines. Functions. Changing the subject	3- Multiplicative reasoning. Transforming and constructing. Algebraic reasoning.	4- Using graphs. Listing and describing. Show that.	5- Revision and recall	Exams
Length of topic (in weeks)	6 weeks	7 weeks	6 weeks	6 weeks	6 weeks	7 weeks
Links to specification	Algebra – Work with coordinates in all four quadrants. Geometry and measures – Use Pythagoras’ Theorem and trigonometric ratios in similar triangles to solve problems involving right angled triangles	Geometry and measures – Use Pythagoras’ Theorem and trigonometric ratios in similar triangles to solve problems involving right angled triangles Number -Recognise and use relationships between operations including inverse operations Algebra – Work with coordinates in	Statistics – Describe simple mathematical relationships between two variables (bivariate data) in observational and experimental contexts and illustrate using scatter graphs. Number -Recognise and use relationships	Algebra – Work with coordinates in all four quadrants Geometry and measures – Use Pythagoras’ Theorem and trigonometric ratios in similar triangles to solve problems involving right angled triangles	All curriculum strands to be reviewed. Curriculum recovery from covid.	Exam timetable, individual student timetables. Examinations
Core Knowledge						
Assessment Task(s)	End of block task	End of block task GCSE Paper Assessment	End of block task	End of block task GCSE Paper Assessment	Strength and weakness assessments	GCSE EXAMINATIONS
Key Knowledge	Gradients and lines. Non- linear graphs. Using graphs. Non- linear graphs	Expanding and factorising. Change the subject. Functions	Multiplicative reasoning. Geometric reasoning. Algebraic reasoning	Transformation and construction. Listing and describing. Show that.....	GCSE preparation and recall	Examinations
Key Skills NUMBER ALGEBRA GEOMETRY RATIO PROBABILITY STATISTICS	Find and use equations of straight lines. Plot and read quadratic curves. Plot cubic and reciprocals. Real life graphs. Speed, distance time graphs.	Factorise single and binomial. Expand single and quadratics. Solve quadratics. Review change the subject of a formula. Volume of a pyramid. Find inputs and outputs. Solve algebraic expressions	Scale enlargement. Direct and inverse proportion Pressure and density. Angles, Pythagoras Trigonometry Complex indices, Nth terms	Transform Construction Loci. Sample space Venn diagrams Plans and elevations. Proof both algebraically and numerically	Number work Equations Probability Ratio Shape statistics	Number work Equations Probability Ratio Shape statistics

Diagnostic feedback to take place at the end of each block of work.

Enrichment:

Maths revision classes held weekly with a selection of activities available.