

<p>Curriculum Aim: Year 7</p>	<p>It is our passion, for every student to develop a love for maths. Every child can learn mathematics given the correct environment and learning experiences, which our curriculum map embodies. We have high expectations of every child and believe with the relevant support all children can succeed in mathematics.</p> <p>Mathematics is in every aspect of life, from personal finance, redecorating, shopping, and engineering. Everywhere you go, mathematics is involved. Our curriculum map is designed to allow students to have exposure to these real-life situations and be able to transfer their skills and knowledge learnt into everyday life. It is also important that every child develops a confidence to apply their mathematical skills across other areas of the curriculum, and our curriculum map has this in mind with links to Science, Geography and Design in particular.</p> <p>The cultural importance of mathematics is embedded into our curriculum. Students will have opportunities to explore the history of mathematics and link this to nature, music, architecture, and religion. This will give children exposure to the cultural relevance of mathematics and how widen their cultural awareness.</p> <p>Our curriculum will allow pupils to not only develop their mathematical skills, but also their reasoning and problem-solving skills. Every child will have exposure to problems and develop techniques in solving problems which are transferrable to problems they may experience. Not only mathematical problem-solving skills, every child will develop skills in resilience and teamwork which they can apply to wider curriculum and life experiences.</p>						
Term	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1		Summer 2
Assessment	<ul style="list-style-type: none"> Basic number and place value Multiplies, factors, roots, powers, and primes Types of numbers and BIDMAS Directed numbers Rounding and estimation 	<ul style="list-style-type: none"> Collect like terms Substitution Expressions with brackets Represent Inequalities Sequences and contexts to express equations and inequalities 	<ul style="list-style-type: none"> Properties of 2D and 3D shape (including symmetry) Time Metric conversions Properties of angles Angle reasoning Construction of basic of 2D shapes 	<ul style="list-style-type: none"> Decimals Fractions FDP Percentage Powers and roots, HCF and LCM 	<ul style="list-style-type: none"> Coordinates Substitution and formulae Collecting like terms Sequences 	<ul style="list-style-type: none"> Area of 2D shapes Tessellation Transformation 2D of shapes including enlargement. 	<ul style="list-style-type: none"> Ratio notation Relationship between fraction and ratio
Topic	Number	Algebra	Geometry and Measure	Number	Algebra	Geometry and Measures	Ratio and Proportion
Powerful Knowledge/ skills	Students will be able to understand the structure of numbers, develop an explicit understanding of the number system applies this to the four operations and calculations and will experience number in context. Student will build upon their knowledge of operations in mathematics and apply this to directed numbers and problems. Students will apply BIDMAS	Students will use learn to write expressions and recognise equivalent expressions. Students will form and solve equations and inequalities by exploring contextual real-life situations represented through equations and inequalities. Students will substitute into key formulae from science and maths and being	Students will be able to describe, classify and identify polygons, angles and construct them using their knowledge of geometrical properties. They will identify rotational and line symmetry and know internal sums of angles in triangles and quadrilaterals. Students will measure and draw angles and work with angles on a straight line, around a	Students will understand how to manipulate prime decomposition. They will extend their understanding of applying their understanding to non-integer values. Students will find the percentage of an amount; percentage increase & decrease; original amount and use them in context. Students will use the four operations with	Students will develop understanding of the cartesian coordinate grid and solve problems in all four quadrants; explore horizontal and vertical lines, midpoints of line segments and problem solve on a coordinate grid.	Students will develop their reasoning with calculating the area of shapes. They will use generalised formulae for finding area of shapes. Students will consider how different transformation act on an object to produce different images as well as enlarge by a positive scale factor.	Students will explore ratio notation, languages, representation, and context. They will work with ratios and quantities.

	with calculations involving indices and roots.	to learn key formula from the specification.	point, parallel lines and create expressions from angle facts.	fractions including mixed numbers and improper fractions.			
Useful online resources	Online resources involve: Student access: Hegartymaths, Corbettmaths, mathswatch Staff access: Mathsbox, Justmaths, Allaboutmaths, Whiterose maths			Online resources involve: Student access: Hegartymaths, Corbettmaths, mathswatch Staff access: Mathsbox, Justmaths, Allaboutmaths, Whiterose maths			
Sequenced from	This unit will build on pupils understanding of the structure of number from primary school.	Missing number problems. Building on Number skills. Continue to use inequality signs learnt at primary school	This unit will build on pupils understanding of shape from primary school.	Building on factors and multiples from AP1. Building on primary school knowledge of fractions and decimals	Applying number knowledge to algebraic contexts	Building on knowledge of area from primary.	Equivalent Fractions, Decimals and Percentages Simplifying fractions
Sequenced to	The skills developed in this unit are vital for building a strong foundation in all number and algebra topics.	Y8- Solving more complex equations and inequalities Rearranging simple formulae	Y9- Construction and Y9- Loci Y8- Angles in polygons	Y9- Growth and Decay Y8- Fractions, decimals and percentages	Y9- Algebraic Manipulation – expanding and factorising	Y9- Scale factors and similar shapes. Y9- Enlargement with negative and fractional scale factors	Y8- Ratio problems 3-way ratios Linking ratios to percentages

Curriculum Aim	Year 8: By the end of year 8 students will develop their skills in number and algebra further and begin to transfer these skills to shape, space and measure and probability. Students will build on knowledge gained in year 7 further and will begin to calculate a percentage increase or decrease using multipliers and start to solve equations with unknowns on both sides. Students will move through the units of work at an appropriate pace for their ability to ensure that skills have been successfully mastered.					
Term	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Assessment	<ul style="list-style-type: none"> Forming and solving equations Representing and solving inequalities Linear graphs and parallel lines 	<ul style="list-style-type: none"> Rounding Estimation Bounds 	<ul style="list-style-type: none"> Scales and maps Real life graphs Rates of change Ratio notation Relationship between fraction and ratio Direct and Inverse proportion (including with algebra and graphs) 		<ul style="list-style-type: none"> Construct graphs Mean, Mode and median and range including outliers Scatter graphs (including best fit and interpolation/extrapolation) 	<ul style="list-style-type: none"> Exterior and interior angles in polygons Review work on angles in parallel lines Reasoning with angles Bearings Area and volume (including circles, composites, prisms) 3D nets and surface area (including prisms)
Topic	Algebra	Number	Ratio and Proportion		Statistics	Geometry
Powerful Knowledge/skills	Students will develop their understanding of solving equations to form and solve equations with unknowns on both sides; and extend into forming and solving an inequality with one unknown and on both sides. Students will be introduced to straight line graphs formally for the first time by plotting coordinates to generate straight line. They will be encouraged to see the connections between the different mathematical representations of a relationship e.g. the equation, the coordinates and the graphical representation. Students will identify parallel lines from algebraic equations.	Students will consolidate their understanding of rounding by using contexts involving measures and quantities. Students will be introduced to significant figures through measuring contexts and encounter estimation in a variety of contexts and practice rounding and unit conversions. Students will use upper and lower bounds in context.	Students will develop their proportional reasoning skills by solving a variety of problems; they will be encouraged to compare different approaches to solving problems involving direct proportion. Students will encounter different contexts where one variable increases, the other decreases, but their product remains constant. Students will reinforce the notion of a ratio as an expression of a constant multiplicative relationship which can be between two quantities in the same unit e.g. fractions or between two quantities in different units e.g. speed measured in miles per hour.		Students will make hypotheses where each of the statistical methods taught will be used. They will begin to look at statistical measures and interpret these in terms of the data. They will calculate the mean, median, mode and range of ungrouped and grouped data and discuss the different measures of centrality and the merits of each. Students will develop their understanding of statistical diagrams and measures to bivariate data, as well as investigate ways of displaying a relationship between two dependent variables and then present the data in tables and in a scatter graph. Students will construct a line of best fit and use to interpolate and extrapolate.	Students will work on problems including angles in parallel and perpendicular lines and will use these rules for setting up and solving equations. Students will use their understanding of angles in triangles to build up to a proof for the sum of the interior angles in polygons by dividing into triangles and then the sum of the exterior angles of a polygon. Students will explore the connection between the circumference of a circle and its diameter and will apply their understanding to problems involving the area and circumference of a circle. Students will use formulae within the context of volume and surface area including changing

					between units of volume and recognise and draw nets of prisms. Students will understand the conventions of bearings and calculate and measure them.
Useful online resources	Online resources involve: Student access: Hegarty maths, Corbettmaths, mathswatch Staff access: Mathsbox, Justmaths, Allaboutmaths				
Sequenced from	Plotting coordinates Solving equations with unknown on one side Substitution Order of operations Directed numbers	Rounding to nearest whole number, ten etc	Ratio notation Relationship between fraction and ratio	Representing data using bar charts Use of the number system	Angle facts Angles in Parallel lines Areas of rectilinear shapes
Sequenced to	Y9- Simultaneous Equations Y10- Coordinate Geometry	Y10- Error Intervals and Calculating with Upper and Lower Bounds	Y9- Direct and Inverse Proportion	Y10- Averages from Tables and graphs	Y10- Using Bearings in Trigonometry Y9- Volume of spheres, cones and frustums Y10- Circle Theorems

Curriculum Aim	Year 9: By the end of year 9 students will consolidate their skills and knowledge from year 7 and 8. Student experiences will vary depending upon the tier they are being taught at GCSE.						
Term	Autumn 1	Autumn 2	Spring 1	Spring 2		Summer 1	Summer 2
Assessment	<ul style="list-style-type: none"> • Quadratic expressions (expanding and factorising) • Plotting quadratics • H-Solving quadratics H- Completing the square and turning points	<ul style="list-style-type: none"> • Theoretical and experimental probability • Single and combined events • Venn diagrams • Sample spaces and two-way tables • H- Tree diagrams (including non-replacement) 	<ul style="list-style-type: none"> • Construction • Congruence • Loci • Pythagoras theorem (including 2D and H- 3D*) 	<ul style="list-style-type: none"> • Scales and maps • Real life graphs • Rates of change • Ratio notation • Relationship between fraction and ratio • Direct and Inverse proportion (H- Algebraic) 	<ul style="list-style-type: none"> • Linear simultaneous equations (graphical and algebraic) • Index notion 	<ul style="list-style-type: none"> • Enlargement • Similar shapes • Area and volume of similar shapes • Right angled trigonometry 	<ul style="list-style-type: none"> • H Surds • Growth and decay • Indices (including fractional and negative) • Standard Form
Topic	Algebra	Probability	Geometry	Ratio and Proportion	Algebra	Geometry	Number
Powerful Knowledge/ skills	<p>All students will create quadratic expressions; expand and factorise binomials, plot quadratic graphs.</p> <p>Higher students will be challenged with solving quadratic equations by using factorisation, completing the square and finding turning points.</p>	<p>All students will calculate the probability of single events; work with theoretical and experimental probabilities and review fractions, decimals and percentages through this. combined events using sample spaces, Venn diagrams, two-way tables and tree diagrams.</p> <p>Higher students will develop a deep understanding on using set notation and finding probabilities from a Venn diagram. Students will also be able to draw and find probabilities from tree diagrams with non-replacement.</p>	<p>All students will use both algebraic and geometric approaches to prove Pythagoras' theorem. They will use the theorem in a variety of contexts to solve problems and find the lengths of missing sides. Students will use a ruler and compass to complete constructions and loci. Students will be able to use the rules of congruence RHS, SAS, ASA, SSS</p> <p>Higher students will stretch their Pythagoras work into 3D Pythagoras problems.</p>	<p>Students will work with similarity and enlargement extending into area and volume of similar shape. They will review work covered in year 7 and 8 on ratio through scales and maps.</p> <p>Higher students will develop their proportion work to include representing direct/inverse using algebraic methods.</p>	<p>All students will set up simultaneous equations graphically and find solutions graphically to a set of one or more simultaneous equations. Students will set up simultaneous equations using algebraic methods to solve simultaneous equation.</p> <p>Higher students will form and solve linear simultaneous equations using algebraic methods.</p>	<p>All students will explore transformations. There will be a strong emphasis on the use of correct mathematical language. Students will deepen their understanding of similarity by considering the trigonometric ratios in right-angled triangles. Students will be able to find missing lengths and angles using SOHCAHTOA.</p> <p>Higher students will consider which properties are invariant under which transformation. Students will also confidently use right-angled trigonometry within multi-step problems.</p>	<p>All students will use calculators to explore & understand scientific notation of standard form. Students will work with index notation and rules, fractional and negative indices. Students will be able to compare and order numbers and calculate in standard form. Students will calculate compound % change, reverse percentage and other growth and decay contexts.</p> <p>Higher students will understand exact form and the use of surds. They will be able to add, subtract, multiply and divide with surds. Students will also be able to perform calculations with combined indices.</p>

Useful online resources	Online resources involve: Student access: Hegartymaths, Corbettmaths, mathswatch Staff access: Mathsbox, Justmaths, Allaboutmaths						
Sequenced From:	Expanding and Factorising (single bracket) Plotting coordinates and linear graphs	Probability terminology, equally likely outcomes and listing strategies	Accurate use of compasses, ruler and protractors	Relationships between ratio and fractions Direct and inverse proportion	Solving equations Powers and roots Plotting coordinates and linear graphs	Area of shapes Transformation (enlargement) of 2D shapes	Powers and roots Percentage increase and decrease using a multiplier Index notation
Sequenced To:	Y10- Solving Quadratic Equations Quadratic Formula Algebraic Fractions Expanding triple brackets Solving by iteration	Y10- And/or rules Dependent events	Y10- Trigonometry with right angled triangles Y10- Circle Theorems	Y10- Ratio, fraction and percentages	Y10- Standard form Y10- Non-linear simultaneous equations	Y10- Non-Right-angled trigonometry Y10- Circle Theorems	Y11- Rationalising the denominator Expanding brackets with surds