Curriculum Aim	Year 10: Our KS4 curriculum, using the AQA specification, allows our students to gain access to a variety of topics which will be further studied and will prepare them for their GCSE assessment. To ensure that the transition between key stages runs smoothly, topics are sequenced and interweaved throughout as well as both summative and formative assessments take a similar format, with KS3 assessment questions looking similar to those that appear in KS4. Likewise, the feedback style is similar so that students can reflect on their progress in the same way as they would approaching years 10 and 11. The vocabulary learnt in years 7-9 will continue to be developed in years 10. The content is taught by an adapted mastery approach which takes into consideration the sequence and progression from one topic into another and to further develop into the teaching of Year 11. Again, it is taught by motivating and engaging learners, using a series of active teach materials and resources, hence engaging learners to achieve to their full potential. To simply put it, we make the lessons 'fun', engaging and challenging learners through games, activities etc. We also use the idea of contextualisation i.e. relating maths to solve real-life situations. So, the students don't just see the abstract nature of maths, but they can easily relate to solve world problems that they meet daily.						
Term	Autumn 1		Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Higher Assessment	• Fractions • Decimals • Percentages • Recurring decimals • Bounds	• Ratio and ratio manipulation • Line segments • Algebraic Ratios • Percentages in context – multipliers • Algebraic direct/inverse proportion	• Basic probability • Tree diagrams • Relative frequency • Combinations • Conditional probability • Independent events	• Expressions and identities • Manipulate expressions • Quadratics expression and equations • Linear inequalities • Simultaneous equations • Non-linear inequalities • Non- Linear simultaneous equations		• Index laws • Standard form • Manipulating surds	• Function notation • Parallel and perpendicular lines • Types of graph • Inverse and composite function • Transformation of functions • Circle graphs • Equations of tangents and perpendicular H- Vector reasoning and proof	• F/H 2D trigonometry • F/H Pythagoras • F Area & volume of shapes • F 3D shapes • F/H Vectors representation • F/H Compound measures • H- 2D Non- right angles trig • H- 3D Pythagoras and Trig
Topic	**Number**	**Ratio and Number**	**Probability**	**Algebra**		**Number**	**Algebra Functions and Graphs**	**Geometry**
Powerful Knowledge/ skills	Students will find higher powers and find roots; change recurring decimals into corresponding fractions and vice versa. Fractions, decimals and percentages.	Students will be able to manipulate ratios in order to problem solve in context and apply percentages. Students will express variables in direct and inverse proportion through formulae.	Students will calculate probabilities using relative frequency, tree diagrams and find with expectation, combinations, conditional probability and Independent events	Students will know the difference between expressions, identities, equations. They will manipulate expressions by rearranging and solving them. They will work with quadratic equations. Students will plot both linear and non-linear inequalities. Students will extend knowledge of simultaneous equations to include finding solutions to non- linear simultaneous equations. Recurring decimals		Students will be able to manipulate numbers using index laws and rationalise the denominator of surds	Students will plot parallel and perpendicular lines. They will understand function notation including Inverse and composite functions and be able to complete transformations of functions. Students will be able to plot a range of graphs including cubic and reciprocal graphs. They will know the equation of a circle and be able to find the equation of a tangent and perpendicular to a circle.	Students will use Pythagoras' on 3D objects; plot trigonometric graphs & use trigonometric ratios in 3D. Students will work with a range of shapes; nets of 3D shapes; surface area; volume of prisms, pyramids, cones & spheres. Students will work with vectors; column vector notation; resultant vectors and vector proof. Students will calculate compound measures e.g. speed, pressure and

							density.

Useful online resources	Student access: Hegartymaths, Corbettmaths, MathsWatch Staff access: Matchbox, Justmaths, Allaboutmaths						
Sequenced from	Fractions, decimals percentages	Percentages Ratio	Basic probability And/or rules Fractions Decimals Direct and inverse proportion	Solving equations Simultaneous equations Expanding and factorising	Indices Number manipulation	Types of angles and lines Linear and quadratic graphs Translation Reflection Equation of lines	Shapes Pythagoras Trigonometry
Term	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1		Summer 2
Foundation Assessment	• Fractions and fraction calculations • Decimals • Percentages • Manipulating FDP • Growth and decay • Simple interest	• Ratio and ratio manipulation • Direct and inverse proportion manipulation	• Basic probability • Tree diagrams • Relative frequency • Combinations • Conditional probability Independent events	• Expressions and identities Manipulate expressions • Quadratics expression and equations • Linear inequalities • Simultaneous equations		• Index laws • Standard form	• Function notation • Parallel and perpendicular lines • Types of graph
Topic	**Number**	**Ratio and Number**	**Probability**	**Algebra**		**Number**	**Algebra** **Functions and Graphs**
Powerful Knowledge/ skills	Students will find higher powers and find roots; change recurring decimals into corresponding fractions and vice versa. Fractions, decimals and percentages.	Students will be able to manipulate ratios in order to problem solve in context.	Students will calculate probabilities using relative frequency, tree diagrams and find with expectation, combinations, conditional probability and Independent events	Students will know the difference between expressions, identities, equations. They will manipulate expressions by rearranging and solving them. They will work with quadratic equations. Students will plot both linear and non-linear inequalities. Students will extend knowledge of simultaneous equations to include finding solutions to non- linear simultaneous equations. Recurring decimals		Students will be able to manipulate numbers using index laws	Students will plot parallel and perpendicular lines. They will understand function notation. Students will be able to plot a range of graphs including cubic and reciprocal graphs.

Sequenced from	Fractions, decimals percentages	Percentages Ratio	Basic probability And/or rules Fractions Decimals Direct and inverse proportion	Solving equations Simultaneous equations Expanding and factorising	Indices Number manipulation	Types of angles and lines Linear and quadratic graphs Translation Reflection Equation of lines
Sequenced to	All of the content is mapped to Y11 exams and will be revisited during year 11. The following topics are covered in Y10 Maths, and are directly sequenced to prepare students for KS5 Maths: • Laws of indices and Surds • Solving quadratic equations • Quadratic functions and graphs • The quadratic formula • Simultaneous equations • Proportion • Circle geometry • Arc length and sector area. • Trig formulas and identities. • Cumulative frequency • Tree diagrams and conditional probability.					

Curriculum Aim	Year 11: By the end of year 11 students will be able to successfully fulfil the requirements of an externally accredited qualification. They will be able to fluently transfer skills between concepts, successfully solve problems and apply their knowledge and skills to real life contexts. Following the mastery approach allows students to gain access to a variety of topics which will be further studied and will prepare them for A level courses in post-16 institutions. The foundations set in KS4, allow those moving onto A level Maths to be able to apply their knowledge to model situations using algebra and other representations, to help make sense of data, to understand the physical world and to solve problems in a variety of contexts, including social sciences and business. It prepares students for further study and employment in a wide range of disciplines involving the use of mathematics.						
Term	Autumn 1		Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Assessment	**Geometry** • Basic Angle Facts • Properties of shapes • Interior and exterior angles • Perimeter and area of 2D shapes • Volume and surface area of prisms • Arc Length and perimeter of sectors • Volume of cones etc • Plans and elevations. • Constructions • Loci • Finding missing sides in similar shapes • Understanding congruency	**Algebra** • Simplifying expressions. • Substitution • Solving Linear equations • Linear Inequalities • Forming and solving quadratics • Laws of Indices • Linear Sequences • Changing the subject of a formula • Quadratic sequences • Factorising quadratics • Geometric sequences • Simultaneous linear equations • H – Quadratic	**Number** • Fractions, Decimals and Percentage Equivalence • Calculating percentages • Four rules of integers and fractions • Estimation • Directed number • Product of prime numbers • Standard form • H- Surds • H- Indices **Pythagoras and Trigonometry** • H- Indices • Finding sides using Pythagoras theorem • Finding sides using trigonometric ratios • H – using trig 3D • H use Sine and Cosine rule • Finding area of a triangle using A= 1/2 absinc	**Statistics** • Finding averages • Charts and graphs • Recognising correlation • Cumulative frequency graphs • Box plots • Lines of best fit • H- Histograms • H- Boxplots and CF • H- Histograms • H- Capture recapture	**Ratio and Proportion** • Simplify ratios • Share a given ratio • Direct proportion • Using fractions in ratio • Density and pressure • Inverse proportion • H- Equations with proportion • H – Gradients of curves	Consolidation/Address gaps from Assessment 1. Focus on exam technique and exam practise for this term. <u>Key topics to include work on:</u> F: Ratio, Number, and money problems, linking percentages with area problems, algebra skills H: Algebra skills, geometry, graphs, and statistical diagrams	

	• Solve complex similar triangle problems • H- Solve problems with similar areas and perimeters • H – Prove triangles are congruent • All Transformations • H- Transform graphs (including Trigometric graphs) • H- Algebraic and geometric proof	inequalities • H - Iteration • H – Proof functions • H – Completing the square • H- Transformation • H- Iteration H- Area under a curve				
Powerful Knowledge/ skills	Students will review constructions from KS3 including constructions of triangles and compass methods for loci. Students will be able to work with algebraic and geometric proof.	Students will find solutions to an equation by an iterative method • Finding the area under a curve • Estimating the gradient using a tangent	Students will review indices and surds and problem solve with indices and surds. Including: multiplying numbers in index form; dividing numbers in index form; raising a power by a power; negative powers; the power of zero; The power of 1 and calculate with fractional indices. Students will convert numbers to and from standard form & perform calculations involving standard form.	Students will learn to produce statistical charts and techniques including box plots, cumulative frequency graphs and histograms. Students will be able to use methods of capture/ recapture to make estimations.		During this period of time, all students will be addressing misconceptions and gaps from assessment 1. Students will be working on exam technique, linking mathematical topics together. Some key topics which will be covered: Foundation- Ratio, Algebra techniques, Angles, Area problems, Money problems with percentages and fractions Higher- Algebra techniques to a high level, graph work, complex geometry and statistics.
Useful online resources	Student access: Hegartymaths, Corbettmaths, MathsWatch Staff access: Matchbox, Justmaths, Allaboutmaths					
KS5 Links:	The following topics are directly sequenced and covered in order to prepare students for KS5 Maths: • Laws of indices and Surds • Solving quadratic equations • Quadratic functions and graphs					

	• The quadratic formula • Simultaneous equations • Proportion • Composite and inverse functions. • Circle geometry • Geometric sequences • Arc length and sector area. • Trig formulas and identities. • Vectors • Cumulative frequency • Tree diagrams and conditional probability.

Curriculum Aim	Year 12: By the end of year 12 students will be able to successfully fulfil the requirements of an externally accredited qualification. They will be able to fluently transfer skills between concepts, successfully solve problems and apply their knowledge and skills to real life contexts.					
Term	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Assessment	**Paper 1:** Pure Mathematics		**Paper 2:** Pure Mathematics		**Paper 3:** Statistics and Mechanics	
Powerful Knowledge/ skills	Algebra and functions Coordinate geometry in the (x, y) plane Further algebra Trigonometry Vectors (2D) Differentiation Integration Exponentials and logarithms		Proof: Algebraic and partial fractions Functions and modelling Series and sequences The binomial theorem Trigonometry Parametric equations		Statistical sampling Data presentation and interpretation Probability Statistical distributions Statistical hypothesis testing	
Useful online resources	Student access: Hegartymaths, Corbettmaths, MathsWatch Staff access: Matchbox, Justmaths, Allaboutmaths					