

Subject: **Mathematics – GCSE Higher Tier**
 Year Group: **Year 9 Higher**

Content Delivered Core knowledge		Content Delivered Core knowledge		Content Delivered Core knowledge	
Autumn 1 September – October	Autumn 2 November – December	Spring 1 January - February	Spring 2 March - April	Summer 1 April - May	Summer 2 June-July
<ul style="list-style-type: none"> • Number • Algebra 	<ul style="list-style-type: none"> • Interpret/ represent data 	<ul style="list-style-type: none"> • Fractions, ratio and percentages 	<ul style="list-style-type: none"> • Angles and Trigonometry 	<ul style="list-style-type: none"> • Graphs • Area and Volume 	<ul style="list-style-type: none"> • Transformations and constructions
Key Curriculum Skills:	Key Curriculum Skills:	Key Curriculum Skills:	Key Curriculum Skills:	Key Curriculum Skills:	Key Curriculum Skills:
<ul style="list-style-type: none"> • Number patterns and reasoning • Place value and estimation • HCF and LCM • Calculating with indices including zero, negative and fractional indices • Standard form • Surds • Algebraic indices • Expanding and factorising (linear and quadratic) • Linear and non linear sequences 	<ul style="list-style-type: none"> • Statistical diagrams • Time series • Scatter graphs and line of best fit • Averages and range 	<ul style="list-style-type: none"> • Fractions • Ratio and proportion • Percentages • Fractions, decimals and Percentages 	<ul style="list-style-type: none"> • Angle properties of triangles and quadrilaterals • Angle properties of polygons (interior and exterior) • Pythagoras’ Theorem • Trigonometry 	<ul style="list-style-type: none"> • Linear graphs • Graphing rates of change • Real-life graphs • Line segments • Quadratic graphs • Cubic and reciprocal graphs • Perimeter and area • Units and accuracy • Prisms • Circles • Sectors of circles • Cylinder and spheres • Pyramids and cones 	<ul style="list-style-type: none"> • 3d solids • Reflection, rotation and enlargement • Bearings and scale drawings • Constructions • Loci
Key Knowledge (Cultural Capital and Content):	Key Knowledge (Cultural Capital and Content):	Key Knowledge (Cultural Capital and Content):	Key Knowledge (Cultural Capital and Content):	Key Knowledge (Cultural Capital and Content):	Key Knowledge (Cultural Capital and Content):
<ul style="list-style-type: none"> • Working with everyday numbers, estimation to complex calculations, • Understanding short notation in mathematical and scientific fields • Understand surds allow us to perform complex 	<ul style="list-style-type: none"> • Designing tables, data collection sheets and displaying data. • Spotting trends using line of best fit <p>Cultural Capital Politics, economics, climate change,</p>	<ul style="list-style-type: none"> • Fractions of quantities • Calculations with fractions • Finding ratios and proportion • Equivalentents • Calculating percentages (increase and decrease) 	<ul style="list-style-type: none"> • Solving geometrical problems <p>Cultural Capital Pythagoras used to form perfect right angles. Even tough Pythagoras has been credited with discovering Pythaoras’</p>	<ul style="list-style-type: none"> • Interpretation of the real world using graphs. Leads into A level maths and beyond • Bounds to ensure limits of acceptability • Circles for movement • Understanding measures used to help explain the size and 	<ul style="list-style-type: none"> • 2D representation of 3D objects • Image reduction and enlargement • Interior design • Basic technical drawing techniques • Universal location systems

<p>calculations with irrational numbers</p> <ul style="list-style-type: none"> • Using correct algebra notation • Using formula <p>Cultural Capital Tradesman and engineers use estimation to make quick calculations Scientists use LCM techniques to predict solar eclipses Scientists use Surds to perform complex calculations with irrational numbers without needing to use a computer Both engineering and IT and financial disciplines use formulas</p>	<p>epidemics all make use of graphs to display complex data so that it is meaningful and to justify decisions made.</p> <p>Investment of capital relies in spotting trends especially on the stock market</p> <ul style="list-style-type: none"> • Sales, purchasing and business forecasts all rely on the visual display of data. 	<p>Cultural Capital</p> <p>Ratios for recipes, colour mixes (including dye), pharmaceuticals, Internal combustion engines (petrol and air mix) and building materials.</p> <p>Currency conversions</p> <p>Calculating discounts and price increases.</p> <p>Finding the original value after a percentage increase or decrease</p> <p>Financial checking affordability of purchased items using credit and therefore interest paid</p>	<p>theorem, there is evidence the ancient Egyptians and Babylonians discovered this way before. Indeed ancient Egyptians used rope with knots and the 3, 4 5 triangle to create perfect vertices for the Egyptian Pyramids</p> <p>Radar systems both military and civil</p> <p>Understanding how trigonometry is crucial to technology – GPS, engineering</p> <p>Trigonometry is also used to find the height of objects such as Trees. This is often done from the ground to ensure safety.</p>	<p>space taken up by objects</p> <p>Cultural Capital Graphs help us to understand and interpret the World we are living in. Can be used to describe a journey, flow of water, weather systems, economic and climate trends. Pollution and its impact on the environment. Engineering – systems engineering on complex systems to understand faults by graphing feedback loops. Engineering automotive, to fine tune engines for either fuel efficiency or performance or a compromise of both. Also to ensure engine emissions meet environmental regulations.</p> <p>Circles- engineering to measure Torque output of engines, electrical motors. Circumference for gearing of bicycles to ensure maximum rider power output efficiency</p> <p>Bounds help us to ensure items built are within</p>	<p>Cultural Capital</p> <p>Trades- Builders ability to interpret architectural drawings showing plans and elevations</p> <p>Basic technical drawing methods used by draughtsmen and architects in the past which are still used but with the aid of CAD.</p> <p>Photography and Special effect artists use enlargement techniques to increase or decrease the size of images</p> <p>Bearings used by civil and military aviation and navy units. Loci – used by Scientists to plot the path of an asteroid, or the orbit of a planet. Used by engineers when planning where to install mobile masts to ensure the most effective mobile signal coverage</p>
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				<p>acceptable tolerances. This is not to important when manufacturing bricks but is absolutely crucial when manufacturing items for safety critical systems for example washers used on aircraft which need to be both traceable (batch number) and within exacting tolerance levels</p> <p>Volume and area for an appreciation of size for DIY projects, engineering and trades.</p>	
Assessment:	Assessment:	Assessment:	Assessment:	Assessment:	Assessment:
Two end of unit multiple choice assessments using diagnostic questions	<ul style="list-style-type: none"> One end of unit multiple choice assessment using diagnostic questions An end of term written, summative assessment on all content since start of year 	One end of unit multiple choice assessments using diagnostic questions	<ul style="list-style-type: none"> One end of unit multiple choice assessment using diagnostic questions An end of term written, summative assessment on all content since start of year 	Two end of unit multiple choice assessments using diagnostic questions	<ul style="list-style-type: none"> One end of unit multiple choice assessment using diagnostic questions An end of year written, summative assessment on all content since start of year
Literacy Curriculum:					
<ul style="list-style-type: none"> Key mathematical terminology shared and discussed with students Framer model used for explicit teaching of some key vocabulary in each unit Root words – including prefixes – and etymology will be explored for certain terminology to develop understanding of, and links within, subject content 					
Home Learning	Home Learning	Home Learning	Home Learning	Home Learning	Home Learning
<ul style="list-style-type: none"> Straight line graphs 	<ul style="list-style-type: none"> Number Algebraic expressions Sequences 	<ul style="list-style-type: none"> Interpret and represent data 	<ul style="list-style-type: none"> Fractions and percentages 	<ul style="list-style-type: none"> Angles and trigonometry 	<ul style="list-style-type: none"> Graphs Area and volume

Subject: **Mathematics – GCSE Higher Tier**

Year Group: **Year 10 Higher**

Content Delivered Core knowledge		Content Delivered Core knowledge		Content Delivered Core knowledge	
Autumn 1 September – October	Autumn 2 November – December	Spring 1 January - February	Spring 2 March - April	Summer 1 April - May	Summer 2 June-July
<ul style="list-style-type: none"> Equations and Inequalities Probability 	<ul style="list-style-type: none"> Multiplicative Reasoning 	<ul style="list-style-type: none"> Similarity and Congruence More Trigonometry 	<ul style="list-style-type: none"> Further Statistics 	<ul style="list-style-type: none"> Equations and Graphs Circle Theorems 	<ul style="list-style-type: none"> Further Algebra
Key Curriculum Skills:	Key Curriculum Skills:	Key Curriculum Skills:	Key Curriculum Skills:	Key Curriculum Skills:	Key Curriculum Skills:
<ul style="list-style-type: none"> Solving quadratic equations Completing the square Simultaneous equations Linear inequalities Experimental probability Tree diagrams Conditional Probability Venn diagrams 	<ul style="list-style-type: none"> Growth and decay Compound Measures Ratio and Proportion 	<ul style="list-style-type: none"> Congruence Proof Similarity Graphs of trig functions Area of any triangle Sine and cosine rule 3D problems Transforming trig graphs 	<ul style="list-style-type: none"> Sampling Cumulative frequency and boxplots Histograms Comparing populations 	<ul style="list-style-type: none"> Simultaneous equations graphs Representing inequalities graphically Quadratic graphs Cubic graphs Radii and chords Tangents Angles in circles Applying circle theorems 	<ul style="list-style-type: none"> Rearranging formulae Algebraic fractions Surds Equations with algebraic fractions Functions Algebraic proof
Key Knowledge (Cultural Capital and Content):	Key Knowledge (Cultural Capital and Content):	Key Knowledge (Cultural Capital and Content):	Key Knowledge (Cultural Capital and Content):	Key Knowledge (Cultural Capital and Content):	Key Knowledge (Cultural Capital and Content):
<ul style="list-style-type: none"> Understanding how equations are crucial to technology and commerce Understanding probability as a way of making predictions based on known information or experimentation 	<ul style="list-style-type: none"> Understanding sales prices, bills, personal finance, exchange rates, compound interest, VAT Comparing and describing measures 	<ul style="list-style-type: none"> Understanding of similarity and congruence in art and design Understanding how trigonometry is crucial to technology – GPS, engineering 	<ul style="list-style-type: none"> Understand how to use data to analyse current affairs, trends and how the world works 	<ul style="list-style-type: none"> Understanding the mechanics of force and motion Understand how graphs describe trends in science and business Understand the history of geometry and its relationship to astronomy 	<ul style="list-style-type: none"> Understanding how to describe maths in nature and architecture eg. Golden ratio Using equations in engineering, computing and sport
Assessment:	Assessment:	Assessment:	Assessment:	Assessment:	Assessment:
Two end of unit multiple choice assessments using diagnostic questions	<ul style="list-style-type: none"> One end of unit multiple choice assessment using diagnostic questions 	<ul style="list-style-type: none"> Two end of unit multiple choice assessments 	<ul style="list-style-type: none"> One end of unit multiple choice assessment using diagnostic questions 	Two end of unit multiple choice assessments using diagnostic questions	<ul style="list-style-type: none"> One end of unit multiple choice assessment using diagnostic questions

	<ul style="list-style-type: none"> An end of term written, summative assessment on all content since start of year 	using diagnostic questions	<ul style="list-style-type: none"> An end of term written, summative assessment on all content since start of year 		<ul style="list-style-type: none"> An end of year written, summative assessment on all content since start of year
Literacy Curriculum:					
<ul style="list-style-type: none"> Key mathematical terminology shared and discussed with students Framer model used for explicit teaching of some key vocabulary in each unit Root words – including prefixes – and etymology will be explored for certain terminology to develop understanding of, and links within, subject content 					
Home Learning	Home Learning	Home Learning	Home Learning	Home Learning	Home Learning
<ul style="list-style-type: none"> Transformations and constructions 	<ul style="list-style-type: none"> Equations and Inequalities Probability 	<ul style="list-style-type: none"> Multiplicative Reasoning 	<ul style="list-style-type: none"> Similarity and Congruence More Trigonometry 	<ul style="list-style-type: none"> Further Statistics 	<ul style="list-style-type: none"> Equations and Graphs Circle Theorems Pinpoint booklet

Subject: **Mathematics – GCSE Higher Tier**
Year Group: **Year 11 Higher**

Content Delivered Core knowledge		Content Delivered Core knowledge		Content Delivered Core knowledge	
Autumn 1 September – October	Autumn 2 November – December	Spring 1 January - February	Spring 2 March - April	Summer 1 April - May	Summer 2 June-July
<ul style="list-style-type: none"> Vectors and Geometric Proof 	<ul style="list-style-type: none"> Proportions and Graphs 	<ul style="list-style-type: none"> Key content revision cards Exam question practice Problem solving skills Pinpoint whole-class intervention lessons Pinpoint individual intervention booklets 			<ul style="list-style-type: none">
Key Curriculum Skills:	Key Curriculum Skills:	Key Curriculum Skills:	Key Curriculum Skills:	Key Curriculum Skills:	Key Curriculum Skills:
<ul style="list-style-type: none"> Vectors and Vector Notation Vector arithmetic Parallel vectors and collinear points Solving geometric problems 	<ul style="list-style-type: none"> Direct proportion Inverse proportion Exponential functions Non-linear graphs Translating graphs of functions Reflecting graphs of functions 				<ul style="list-style-type: none">
Key Knowledge (Cultural Capital and Content):	Key Knowledge (Cultural Capital and Content):	Key Knowledge (Cultural Capital and Content):	Key Knowledge (Cultural Capital and Content):	Key Knowledge (Cultural Capital and Content):	Key Knowledge (Cultural Capital and Content):
<ul style="list-style-type: none"> Understand how vectors are used in weather 	<ul style="list-style-type: none"> Understand how graphs can be used to visualise 				<ul style="list-style-type: none">

forecasting, aviation and CGI animation	trends in economics, business and demographics				
Assessment:	Assessment:	Assessment:	Assessment:	Assessment:	Assessment:
Practice paper formative assessments, analysed using pinpoint to create personalised intervention program	<ul style="list-style-type: none"> Practice paper formative assessments, analysed using pinpoint to create personalised intervention program MOCK EXAM 1 	<ul style="list-style-type: none"> Practice paper formative assessments, analysed using pinpoint to create personalised intervention program 	<ul style="list-style-type: none"> Practice paper formative assessments, analysed using pinpoint to create personalised intervention program MOCK EXAM 2 	FINAL ASSESSMENTS	<ul style="list-style-type: none">
Literacy Curriculum:					
<ul style="list-style-type: none"> Key mathematical terminology shared and discussed with students Framer model used for explicit teaching of some key vocabulary in each unit Root words – including prefixes – and etymology will be explored for certain terminology to develop understanding of, and links within, subject content 					
Home Learning	Home Learning	Home Learning	Home Learning	Home Learning	Home Learning
<ul style="list-style-type: none"> Practice papers Pinpoint booklets DFM 	<ul style="list-style-type: none"> Practice papers Pinpoint booklets DFM 	<ul style="list-style-type: none"> Practice papers Pinpoint booklets DFM 	<ul style="list-style-type: none"> Practice papers Pinpoint booklets DFM 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none">