

Year 11 H	UNIT / LESSON	OBJECTIVE	Expected Prior Knowledge
Unit 1 [2 weeks]	<b>Further Quadratics, rearranging formulae and identities</b>		
	Factorising quadratics and solving quadratics	Use quadratic graphs to solve problems.	Multiply double brackets.
		Identify and interpret roots, intercepts and turning points of quadratic functions algebraically.	Recognise quadratic expressions.
		Deduce roots algebraically.	Square single brackets.
	Rearranging formulae	Solve quadratic equations $ax^2 + bx + c = 0$ where $a=1$ .	Plot graphs of quadratic functions.
		Change the subject of a formula where the power of the subject appears. Change the subject of a formula where the subject appears twice.	Recognise a quadratic function. Know the difference between an expression, an equation, a formula and an identity.
	Proof	Identify expressions, equations, formulae and identities. Prove results using algebra.	
Iteration	<b>find approximate solutions to equations numerically using iteration inc. the use of suffix notation in recursive formulae)</b>		
Unit 2 [1 week]	<b>Pythagoras and Trigonometry recap</b>		
	Pythagoras' Theorem & Trigonometry	Use trigonometric ratios to solve problems Use Pythagoras' Theorem to solve problems	Know the exact values of the sine, cosine and tangent of some angles. Identify when to use Pythagoras' Theorem and when to use trigonometric ratios
		Use Pythagoras' theorem in 3D. Use trigonometry in 3D.	
Unit 3 [1 week]	<b>Sine and cosine rules</b>		
	Calculating areas and the sine rule	Find the area of a triangle and a segment of a circle. Use the sine rule to solve 2D problems.	
	The cosine rule and 2D trigonometric problems	Use the cosine rule to solve 2D problems. Solve bearings problems using trigonometry.	
Unit 4 [1 week]	<b>Growth and Decay</b>		
	Growth and decay	Find an amount after repeated percentage change. Solve growth and decay problems, including compound interest.	
		<b>Work with general iterative processes.</b>	
Unit 5 [1.5 weeks]	<b>Circle Theorems</b>		
	Radii and chords	Solve problems involving angles, triangles and circles. Understand and use facts about chords and their distance from the centre of a circle. Solve problems involving chords and radii.	
	Tangents	Understand and use facts about tangents at a point and from a point. Give reasons for angle and length calculations involving tangents.	
Angles in circles 1	Understand, prove and use facts about angles subtended at the centre and the circumference of circles. Understand, prove and use facts about the angle in a semicircle being a right angle. Find missing angles using these theorems and give reasons for answers.		

	Angles in circles 2	Understand, prove and use facts about angles subtended at the circumference of a circle. Understand, prove and use facts about cyclic quadrilaterals. Prove the alternate segment theorem.
	Applying circle theorems	Solve angle problems using circle theorems. Give reasons for angle sizes using mathematical language. Find the equation of the tangent to a circle at a given point.
<b>Unit 6</b>	<b>Equation of a Circle</b>	
	Circles	Draw the graph of a circle. Recognise and use the equation of a circle with centre at the origin Find the equation of a tangent to a circle at a given point
<b>Unit 7</b>	<b>Further equations and graphs</b>	
	Graphs of cubic functions	Find the roots of cubic equations. Sketch graphs of cubic functions. Solve cubic equations using an iterative process.
	Graphs of cubic and reciprocal functions	Draw and interpret graphs of cubic functions.  Draw and interpret graphs of $y = 1/x$ .
	Non-linear graphs	Draw and interpret non-linear graphs to solve problems.
<b>Unit 8</b>	<b>Direct and Inverse Proportion</b>	
[1.5 weeks]	Proportion and graphs	Recognise and use direct proportion on a straight-line graph as a rate of change.  Understand the link between the unit ratio and the gradient.
	Proportion problems	Recognise different types of proportion. Solve word problems involving direct and inverse proportion.  Understand that X is inversely proportional to Y is equivalent to X is proportional to $1/y$ Interpret equations that describe direct and inverse proportion <b>Construct and interpret equations that describe direct and inverse proportion</b>
<b>Unit 9</b>	<b>Vectors and geometric proof</b>	
[2 weeks]	Vectors and vector notation	Understand and use vector notation. Work out the magnitude of a vector.
	Vector arithmetic	Calculate using vectors and represent the solutions graphically. Calculate the resultant of two vectors.
	More vector arithmetic	Solve problems using vectors. Use the resultant of two vectors to solve vector problems.
	Parallel vectors and collinear points	Express points as position vectors. Prove lines are parallel. Prove points are collinear.
	Solving geometric problems	Solve geometric problems in two dimensions using vector methods. Apply vector methods for simple geometric proofs.

REVISION & MOCK EXAMS

CHRISTMAS HOLIDAY

Unit 10 [2 weeks]	<b>Algebraic Fractions</b>		
	Algebraic fractions	Add and subtract algebraic fractions. Multiply and divide algebraic fractions. Change the subject of a formula involving fractions where all the variables are in the denominators.	
	Simplifying algebraic fractions	Simplify algebraic fractions.	
	Surds	Simplify expressions involving surds. Expand expressions involving surds. Rationalise the denominator of a fraction.	
	More algebraic fractions	Add and subtract more complex algebraic fractions. Multiply and divide more complex algebraic fractions.	
	Solving algebraic fraction equations	Solve equations that involve algebraic fractions.	
Unit 11 [2 weeks]	<b>Transforming Functions &amp; Trigonometric Graphs</b>		
	Accuracy	Understand and use upper and lower bounds in calculations involving trigonometry.	
	Functions	Use function notation. Find composite functions. Find inverse functions. Sketch translations and reflections of a given function	Interpret simple expressions as functions with inputs and outputs
	Exponential functions	Recognise graphs of exponential functions. Sketch graphs of exponential functions.	
	Non-Linear graphs	Understand the relationship between translating a graph and the change in its function notation.	
	Reflecting and stretching graphs of functions	Understand the effect stretching a curve parallel to one of the axes has on its function form. Understand the effect reflecting a curve in one of the axes has on its function form.	
	Transforming trigonometric graphs 1	Recognise how changes in a function affect trigonometric graphs.	
Transforming trigonometric graphs 2	Recognise how changes in a function affect trigonometric graphs.		
<b>SOW DICTATED BY MOCK ANALYSIS USING PINPOINT LEARNING</b>			