

Further Maths Year 11 Curriculum End Points and key vocabulary

	Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
Unit of Work	Algebra 3	Coordinate geometry	Calculus	Geometry 2	Reap and review	
Ethos Links	STEM - Use of algebra in many different areas of business and applications of equations	STEM - Use of geometry in engineering and other construction areas including architecture	STEM - Use of algebra in many different areas of business and applications of equations	STEM - Use of geometry in engineering and other construction areas including architecture		
Knowledge	<p>By the end of this unit students will know and understand:</p> <p>Domain and range of functions</p> <ul style="list-style-type: none"> To understand what the domain and range are of a function are How to state the range of a function given the domain How to state the domain and range of a given graph <p>Composite functions</p>	<p>By the end of this unit students will know and understand:</p> <p>The distance between two points</p> <ul style="list-style-type: none"> Use Pythagoras' theorem to calculate the distance between two points <p>The midpoint of a line joining two points</p> <ul style="list-style-type: none"> How to find the coordinates of a midpoint of a 	<p>By the end of this unit students will know and understand:</p> <p>Differentiation using standard results</p> <ul style="list-style-type: none"> Differentiate an equation with one or more terms Expand or divide equations to differentiate Use differentiation to calculate the gradient at a given point. <p>Tangents and normal</p>	<p>By the end of this unit students will know and understand:</p> <p>Using the sine and cosine rules together</p> <ul style="list-style-type: none"> Use the sine rule and cosine rule to solve problems <p>Lines and planes in three dimensions</p> <ul style="list-style-type: none"> Use Pythagoras in three dimensions <p>Use the sine rule and cosine rule in three dimensions</p>	<p>By the end of this unit students will know and understand:</p> <p>Recap and review</p>	

	<ul style="list-style-type: none"> • How to write a composite function involving 2 functions • How to write a composite function involving 3 functions • How to solve problems with composite functions <p>Graphs of linear functions</p> <ul style="list-style-type: none"> • Know the difference between sketching and drawing • Sketch graphs of more complex straight-line graphs <p>Graphs of quadratic functions</p> <ul style="list-style-type: none"> • Know how to plot a quadratic graph from a table of values • Understand that all quadratic graphs have a line of symmetry and find an equation for the line of symmetry <p>Inverse functions</p> <ul style="list-style-type: none"> • How to find the inverse of a function given a function • To know and understand that that when you 	<p>line segment given the coordinates of the end point</p> <ul style="list-style-type: none"> • How to find the coordinates of an endpoint of a line segment given the coordinates of the midpoint • How to solve problems using midpoints and endpoints of line segments <p>Equation of a straight line</p> <ul style="list-style-type: none"> • How to use basic straight-line facts to solve problems with coordinates • How to use and apply geometry facts to straight line graphs <p>The intersection of two lines</p> <ul style="list-style-type: none"> • Work out graphically the point of intersection of two lines • Solve simultaneous equations graphically with two linear graphs <p>Dividing a line into a given ratio</p> <ul style="list-style-type: none"> • How to apply ratio to 	<ul style="list-style-type: none"> • Use differentiation, substitution and rearranging to calculate the gradient and equation of a tangent at a given point • Use differentiation, substitution and rearranging to calculate the gradient and equation of a normal at a given point <p>Increasing and decreasing functions</p> <ul style="list-style-type: none"> • Differentiate to show whether a function is an increasing or decreasing function <p>The second derivative</p> <ul style="list-style-type: none"> • Calculate the second derivative • Apply the second derivative to real life situations <p>Stationary points</p> <ul style="list-style-type: none"> • <i>Identify when the gradient of a curve is 0 to identify stationary points</i> <i>Classify stationary points as either</i> 			
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	<p>graph a line and its inverse function, they are reflected in the line $y=x$</p> <p>Graphs of exponential functions</p> <ul style="list-style-type: none"> • Use a table of values to draw an exponential graph • How to state the number of roots there are with multiple graphs • Solve problems with exponential graphs <p>Graphs of functions with up to three parts in their domains</p> <ul style="list-style-type: none"> • How to draw graphs with two or three parts in their domains • How to deduce the domains from a drawn graph 	<p>coordinate problems using line segments</p> <p>Equation of a circle</p> <ul style="list-style-type: none"> • Recognising the equation of a circle • Deducing the radius and centre of a circle from the equation • Deducing the equation given the radius and centre point of a circle • Rearranging equations of circles to deduce the centre and radius <p>Applying circle theorems to solve problems with equations of circles.</p>	<p><i>maximums or minimums.</i></p>			
<p>Key Vocabulary</p>	<p>Domain Range Composite Inverse Exponential Roots</p>	<p>Midpoint Endpoint Line segment Intersection Simultaneous Graphically Centre Radius</p>	<p>Gradient Differentiation Derivative Stationary Tangent Normal Maximum Minimum</p>	<p>Sine Cosine Tangent Plane Three dimensions</p>		