

NAME		TEACHER				
My GCSE Target Grade is		End of Cycle Teacher Assessment Please circle				
		SAE	AE	E	BE	SBE
End of unit assessment type		Your end of topic assessment will be a written exam.				

YEAR 11 HIGHER CYCLE 1: Circle Theorems & PROOF

	Knowledge	Prior Knowledge	End of Topic	Pre Learning
Circle Theorems	Radii and Chords – I can solve problems involving chords and radii and find the centre of a circle using a ruler and compass			
	Tangents – I can use the facts about tangents at a point and from a point & can give reasons for angle and length calculations involving tangents (tangent meets radius at 90°)			
	Angles in Circles 1 – I understand and can use facts about angles subtended at the centre and circumference of circles and use facts about the angle in semicircle being a right angle			622-636
	Angles in Circles 2 – I understand and can use facts about angles subtended at the circumference of circle and use facts about cyclic quadrilaterals			
	Problem Solving – I can solve angle problems using circle theorems and give reasons using mathematical language			
	Circle Theorem Proofs – I can prove key circle theorems using known angle facts			
Algebra	Algebraic Notation & Proof – I can identify odd, even and consecutive numbers written algebraically and I can prove a result using algebra			324
	Algebraic Fractions – Add and subtract more complex algebraic fractions			172
	Solving Algebraic Fractions – Solve equations that involve algebraic fractions			187, 229
	Functions - I can use function notation and write expressions using function machines			288-297
	Composite Functions – I can find the result of composite functions			
	Inverse Functions – I can find the inverse of a function			
	Harder Functions – I can solve advanced problems involving multiple functions			
Lines	Equation of a Line – I understand and can use $y = mx + c$ and $ax + by = c$ to represent the equation of a straight line and can identify the x and y intercepts			208-213
	Gradient – I can find the gradient of a line between 2 points, with and without a graph			203-204
	Line Segments - I can find the co-ordinates of the midpoint of a line segment and find the gradient and length of a line segment (using Pythagoras)			
	Parallel & Perpendicular Lines – I can find the equation of parallel and perpendicular lines, given the gradient and a point, 2 points and from a diagram			215-216
	Equation of a Circle – I can find the equation of the tangent to a circle at a given point			315-320

LEARNING TOOLS

MY KEY TOPICS	KEY EQUATION	$x^2 + y^2 = r^2$
	KEY TOPIC 2	

KEYWORDS **Segment, Tangent, Chord, Parallel, Proof**

CAREERS	<ul style="list-style-type: none"> • Interior designer or skilled labourer such as painter to use skills of circles and fractions. • Leading to A level maths. Career in Actuary using financial and statistical theories, assessing the likelihood of a particular event occurring and its possible financial costs.
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YEAR 11 HIGHER CYCLE 2: PROPORTION, ALGEBRA & GEOMETRY

	Knowledge	Prior knowledge	End of topic	Prior Learning
Proportion	Enlargements – I can enlarge shapes by a fractional and negative scale factor about a centre of enlargement and describe any Enlargement on an axis			646-647
	Linear / Area Scale Factor – I can use linear and area scale factor to solve geometric problems and understand the links between similar shapes and area			
	Similarity in 3D Shapes – I can use the link between scale factors for length, area and volume to solve problems and correctly use the scale factor			
	Direct Proportion – I can write and use equations involving the constant of proportionality (k) to solve problems involving direct proportion			344
	Direct Proportion 2 – I can solve problems involving square and cubic proportionality and apply to problem solving questions involving compound measures			345
	Inverse Proportion - I can write and use equations involving the constant of proportionality (k) to solve problems involving inverse proportion			347
	Proportion Graphs – I can use a recognise graphs showing direct and inverse proportion			
Algebra	Geometric Sequences – I can continue and solve problems using geometric sequences			
	Fibonacci Sequences – I can work out terms in Fibonacci sequences			
	Quadratic Sequences – I can find the nth term of a quadratic sequence			
	Quadratic Simultaneous Equations – I can solve simultaneous equations algebraically with one linear and one quadratic (or circular) equation and apply to real life contexts			
Geometry	3D Solids – Draw plans and elevations of 3D solids (using isometric and squared grids)			
	Volume of 3D Solids – I can calculate the volume and surface area of any 3D solid and apply to problem solving questions			578, 583
	Bearings – I can draw, measure and solve problems involving bearings			
	Trigonometry with Bearings - I can apply the Sine and Cosine rules to problem solving questions (3D / Bearings / Non-calculator)			531
	3D Pythagoras & Trigonometry - I can solve problems using Pythag and Trig in 3D.			505-507 854-863

LEARNING TOOLS

MY KEY TOPICS	KEY TOPIC 1	
	KEY TOPIC 2	
KEY QUESTIONS	Sine Rule =	Cosine Rule =
KEYWORDS		Iterative, Scale Factor, Term, Proportion
CAREERS	<ul style="list-style-type: none"> A research scientist relies on advanced science and maths courses for data analysis and drawing conclusions, so part of their educational background is in maths. Mathematicians use their analysis of facts and figures to find solutions to business problems. This position entails developing statistical models that are used to analyze data, interpreting mathematical information to make business decisions, and writing reports that explain calculations and how conclusions were reached. 	

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YEAR 11 HIGHER	CYCLE 3: NUMBER & GRAPHS
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	Knowledge	Prior knowledge	End of topic	Pre Learning
Number / Algebra	Upper & Lower Bounds – I can calculate using Upper and Lower Bounds and given your answers to a suitable degree of accuracy			137-139
	Completing the Square 1 – I can complete the square for a quadratic function of the form $x^2 + bx + c$ and find the roots of a quadratic equation by completing the square			238-239
	Completing the Square 2 – I can complete the square for a quadratic function of the form $ax^2 + bx + c$ and find the roots of a quadratic equation by completing the square			
	Rearranging Formula – I can change the subject of a formula including with powers / roots / fractions.			285-287
	Iteration – I can solve quadratic and cubic equations using an iterative process and I am confident rearrange complex equations to reach a given form			322-323
Data & Graphs	Cumulative Frequency – I can draw and interpret cumulative frequency tables and diagrams and work out the median, quartiles and interquartile range			
	Box Plots – I can draw and interpret box plots and make comparisons by commenting on the median and spread of data of two box plots			
	Histograms – I understand frequency density and can draw histograms given a frequency table and I can work backwards to complete a table given a histogram			
	Exponential Functions – I can recognise the graphs of exponential functions and find an unknown co-ordinate using a simultaneous approach when given 2 other points			302, 800-803
	Non-Linear Graphs – I can calculate the gradient of a tangent at a point to estimate (acceleration on a speed / time graph)			298-301
	Area Under a Graph (Trapezium Rule) – I can estimate the area under a non-linear graph using the trapezium rule and decide if my estimate is under or over			891-893
	Graph Transformations 1 – I can translate the graph of any function along both the x and y axis, including trigonometric functions			307-313
	Graph Transformations 2 – I understand the effect stretching a curve parallel to one of the axes has on its function form			
Graph Transformations 2 – I understand the effect reflecting a curve in one of the axes has on its function form				

LEARNING TOOLS		
MY KEY TOPICS	KEY TOPIC 1	
	KEY TOPIC 2	
KEY EQUATIONS	What does the area under a velocity / time graph represent?	
KEYWORDS	Exponential, Proportional, Velocity	
CAREERS	<ul style="list-style-type: none"> Statisticians specialize in the use of statistical methods to help businesses solve problems, provide data to answer specific questions or analyze data from surveys and studies. They use graphs, tables, charts and other visual representations of information to analyze information or communicate their findings to others. 	

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YEAR 11 HIGHER	CYCLE 4: NUMBER & GEOMETRY
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	Knowledge	Prior knowledge	End of topic	Pre Learning
Algebra	Simultaneous Equations – I can solve simultaneous equations graphically by drawing graphs on an axis (including when one is linear, and one is quadratic)			259-260
	Inequalities Graphically – I can represent inequalities on graphs and identify regions which satisfy a set of inequalities			273-276
	Quadratic Functions – I can recognise and draw quadratic functions and identify key points on the graph (both accurately and sketching) and find approximate solutions			
	Quadratic Inequalities – I can solve quadratic inequalities and correctly identify the region(s) that is satisfied by the function			277
	Solving Algebraic Fractions – I can solve equations involving algebraic fractions (including those that need factorising)			244
Probability	Probability Trees – I can draw and use frequency trees and complete probability tree diagrams to use the multiplication law to find the chance of an event happening			
	Conditional Probability – I can decide if two events are independent & draw and use tree diagrams to calculate conditional probability (with and without replacement)			
	Algebraic Conditional Probability - I can solve complex problems involving conditional probability using tree diagrams with an algebraic approach			
Vectors	Vectors – I can understand and use vector notation			593-601
	Magnitude of a Vector – I can calculate the magnitude of a vector using Pythagoras theorem including with surds			
	Vectors Calculations – I can add and subtract & find multiples of vectors and represent the solutions on a grid			
	Resultants – I can find the resultant of two vectors and solve vector geometry problems			
	Parallel Vectors – I can prove two lines are parallel using vectors and a scalar			
	Exam Questions			603-606
	Vector Problem Solving – I can solve geometric problems in 2D using vector methods and apply to simple geometric proofs			816-820

LEARNING TOOLS				
MY KEY TOPICS	KEY TOPIC 1			
	KEY TOPIC 2			
KEY WORDS	Region	Alternate	Origin (0,0)	Subtended
CAREERS	<ul style="list-style-type: none"> In addition to teachers, professors and scientists, there are many other jobs that require algebra on a regular basis such as: Air traffic controllers, Architects, computer engineers and analysts. The list isn't finite there. Economists, market research analysts, as well as dietitians and nutritionists also all use algebra regularly. 			