C1 (EDEXCEL)

Topic	Objectives	ICT Resources including Bring on the Maths (BOTM) Match Up Maths (MUM)	GlosMaths Resources	Assessment	Success For All and other resources

C1 Mindmap

Algebra

Prior knowledge:

☺ *Use index laws to simplify and calculate the value of expressions involving multiplication and division of integer powers, zero powers, fractional and negative powers;*
☺ *Understanding that the inverse operation of raising a positive number to power n is raising the result of this operation to power 1/n*
☺ *Use surds and π in exact calculations, without a calculator;*
☺ *Rationalise a denominator such as $1/\sqrt{3} = \sqrt{3}/3$*
☺ *Generate points and plot graphs of simple quadratic functions [for example, $y = x^2$; $y = 3x^2 + 4$] , then more general quadratic functions [for example, $y = x^2 - 2x + 1$] ; plot graphs of more complex quadratic and cubic functions; estimate values at specific points, including at maxima and minima*
☺ *Solve quadratic equations by factorisation, completing the square and using the quadratic formula.*
☺ *Find the exact solutions of two simultaneous linear equations in two unknowns by eliminating a variable*
☺ *Solve exactly, by elimination of an unknown, two simultaneous equations in two unknowns, one of which is linear in each unknown, and the other is linear in one unknown and quadratic in the other, or where the second is of the form $x^2 + y^2 = r^2$*
☺ *Find the intersection points of the graphs of a linear and quadratic function, knowing that these are the approximate solutions of the corresponding simultaneous equations representing the linear and quadratic functions*
☺ *Solve several linear inequalities in two variables and find the solution set*
☺ *Manipulate algebraic expressions by collecting like terms, multiplying a single term over a bracket, taking out common factors, expand the product of two linear expressions eg (ax ± p)(bx ± q); factorising quadratic expressions including the difference of two squares and cancelling common factors in rational expressions*
☺ *Plot graphs of simple cubic functions, the reciprocal function $y = 1/x$, $x \neq 0$, the exponential function $y = k^x$ for integer values of x and simple positive values of k, the circular functions y = sin x and y = cos x, using a spreadsheet of graph plotter as well as pencil and paper; recognise the characteristic shapes of all these functions*
☺ *Transform triangles and other 2-D shapes by translation, rotation and reflection and combinations of these transformations*
☺ *Apply to the graph of $y = f(x)$ the transformations $y = f(x) + a$, $y = f(ax)$, $y = f(x + a)$, $y = a f(x)$ for linear, quadratic, sine and cosine functions $f(x)$*

Laws of indices for all rational exponents.	Maths 2 ∞ + beyond Indices *BOTM* Algebraic Indices I Algebraic Indices II Numerical Indices I Numerical Indices II Law of Indices	*Simple exponential equations Follow on*; Teacher Notes	*On Target 1*	*N12 INDICES* RISP 35 NRich Giants Climbing Powers
Use and manipulation of surds.	*MUM* Surds BOTM Manipulation of surds			*N11 SURDS* NRich The Root of The Problem Absurdity

C1 (EDEXCEL)

Topic	Objectives	ICT Resources including Bring on the Maths (BOTM) Match Up Maths (MUM)	GlosMaths Resources	Assessment	Success For All and other resources
Algebra	**Quadratic functions and their graphs. The discriminant of a quadratic function.**	BOTM Difference between two squares Completing the Square *Quadratic functions* Analysing Graphs	*Quadratic Sort*	Mathsnet Exam Questions	*C1 CLASSIFYING QUADRATICS* RISP10 RISP 33
	Completing the square. Solution of quadratic equations.		Song 1 *Song 2*		RISP 17 **NRich** Proof Sorter- Quadratic Equation Power Quady Quadratic Harmony
	Solution of simultaneous equations. Analytical solution by substitution.	*BOTM* Simultaneous equations			RISP 8 RISP 12 **NRich** System Speak Always Two
	Solution of linear and quadratic inequalities.	*BOTM* Inequalities			**NRich** Article: Proofs with Pictures Unit Interval Eyes Down In between

C1 (EDEXCEL)

Topic	Objectives	ICT Resources including Bring on the Maths (BOTM) Match Up Maths (MUM)	GlosMaths Resources	Assessment	Success For All and other resources
	Algebraic manipulation of polynomials, including expanding brackets and collecting like terms, and factorisation.	*BOTM* Simplifying algebraic fractions Manipulating algebraic fractions Factorising		*On Target 2*	RISP 3 **NRich** Sums of Squares Common Divisor Root to Poly Polynomial Relations
	Graphs of functions; sketching curves defined by simple equations. Geometrical interpretation of algebraic solution of equations. Use of intersection points of graphs of functions to solve equations.	BOTM Curve Sketching	*Graph Recognition loop*	True, Never, Sometimes; Teacher Notes	RISP 6 RISP 34 **NRich** Witch of Agnesi Intersections
	Knowledge of the effect of simple transformations on the graph of y = f(x) as represented by y = af(x), y = f(x) + a, y = f(x+a), y = f(ax)	AUTOGRAPH Transforming Graphs; Teacher Notes Shoot That Goal Explore y = mx + c Explore trig functions GSP Transforming functions BOTM Transforming graphs	*Transform Loop*	*Mathsnet Exam Questions*	NRich Parabolic Patterns
Things to make you go hmmmmmm…….					

C1 (EDEXCEL)

Topic	Objectives	ICT Resources including Bring on the Maths (BOTM) Match Up Maths (MUM)	GlosMaths Resources	Assessment	Success For All and other resources
Co-ordinate geometry in the (x,y) plane	**Prior knowledge:** ☺ *Understand that one coordinate identifies a point on a number line, that two coordinates identify a point in a plane and three coordinates identify a point in space, using the terms '1-D', '2-D' and '3-D'* ☺ *Use conventions for coordinates in the plane* ☺ *Locate points with given coordinate* ☺ *Plot points in all four quadrants* ☺ *Find the coordinates of points identified by geometrical information* ☺ *Find the coordinates of the midpoint of the line segment AB, given the points A and B, then calculate the length AB* ☺ *Recognise (when values are given for m and c) that equations of the form y = mx + c correspond to straight-line graphs in the coordinate plane; plot graphs of functions in which y is given explicitly in terms of x (as in y = 2 x + 3), or implicitly (as in x + y = 7)* ☺ *Find the gradient of lines given by equations of the form y = mx + c (when values are given for m and c)* ☺ *Understand that the form y = mx + c represents a straight line and that m is the gradient of the line, and c is the value of the y intercept* ☺ *Explore the gradients of parallel lines and lines perpendicular to these lines [for example, know that the lines represented by the equations y = -5x and y = 3 - 5 x are parallel, each having gradient (-5) and that the line with equation y = x divided by 5 is perpendicular to these lines and has gradient 1/5]*				
	Equation of a straight line in forms *y = mx + c*, *y-y₁ = m(x-x₁)* and …	AUTOGRAPH Linear 3 points Teacher Notes Shoot That Goal Explore y = mx + c	Why y = mx + c? *We will , we will graph you*; Teacher notes *TRIO; Teacher notes* Co-ord Loop(Grad = ½) Kung Fu	*On Target* True, Never, Sometimes; Teacher Notes	RISP 5 RISP 10
	… ax + by + c = 0	BOTM Linear Equations	*Co-ord Match*; Teacher Notes	Ivor Cocked Up	

C1 (EDEXCEL)					
Topic	**Objectives**	**ICT Resources** including Bring on the Maths (BOTM) Match Up Maths (MUM)	**GlosMaths Resources**	**Assessment**	**Success For All and other resources**
	Conditions for two straight lines to be parallel or perpendicular to each other.	AUTOGRAPH Dog in the Fridge; Teacher Notes *BOTM* Parallel lines Perpendicular lines Unit Summary	Perpendicular Proof Teacher Notes	*Mathsnet Exam Questions* PROBING QUESTIONS	*A10 CONNECTING PERPENDICULAR LINES* **NRich** Parabella Enclosing Squares
Things to make you go hmmmmmm…….					

C1 (EDEXCEL)

Topic	Objectives	ICT Resources including Bring on the Maths (BOTM) Match Up Maths (MUM)	GlosMaths Resources	Assessment	Success For All and other resources
Sequences and series	**Prior Knowledge:** ☺ *Generate common integer sequences (including sequences of odd or even integers, squared integers, powers of 2, powers of 10, triangular numbers)* ☺ *Generate terms of a sequence using term-to-term and position-to-term definitions of the sequence* ☺ *Use linear expressions to describe the n^{th} term of an arithmetic sequence, justifying its form by reference to the activity or context from which it was generated*				
	Sequences, including those given by a formula for the *n*th term and those generated by a simple relation in the form $x_{n+1} = f(x_n)$	*BOTM* Recurrence relations	Introducing Sequences and Series	*On Target* True, Never, Sometimes; Teacher Notes AS Treasure Hunt Teacher Notes *Mathsnet Exam Questions* PROBING QUESTIONS	N13 ANALYSING SEQUENCES RISP 1 RISP 2 RISP 20 NRich Proof Sorter – Sum of an AP Prime AP
	Arithmetic series, including the formula for the sum of the first *n* natural numbers.	BOTM Identifying progressions Arithmetic progressions Sigma notation	*TRIO; Teacher Notes* *AS Loop* Do the AS Conga *Proof Jumble*		
	Understanding of Σ notation.				
	Things to make you go hmmmmmm…….				

C1 (EDEXCEL)

Topic	Objectives	ICT Resources including Bring on the Maths (BOTM) Match Up Maths (MUM)	GlosMaths Resources	Assessment	Success For All and other resources
Differentiation	**Prior Knowledge:** ☺ *Use index laws to simplify and calculate the value of expressions involving multiplication and division of integer powers, zero powers, fractional and negative powers* ☺ *Recognise (when values are given for m and c) that equations of the form y = mx + c correspond to straight-line graphs in the coordinate plane; plot graphs of functions in which y is given explicitly in terms of x (as in y = 2 x + 3), or implicitly (as in x + y = 7)* ☺ *Find the gradient of lines given by equations of the form y = mx + c (when values are given for m and c)* ☺ *Understand that the form y = mx + c represents a straight line and that m is the gradient of the line, and c is the value of the y intercept* *explore the gradients of parallel lines and lines perpendicular to these lines [for example, know that the lines represented by the equations y = -5x and y = 3 - 5 x are parallel, each having gradient (-5) and that the line with equation y = x divided by 5 is perpendicular to these lines and has gradient 1/5]*				
	The derivative of f(x) as the gradient of the tangent to the graph of y = f (x) at a point; the gradient of the tangent as a limit; interpretation as a rate of change. Second order derivatives.	AUTOGRAPH Gradient Function	*Gradient = 2?; Teacher Notes* First Principles; Teacher Notes Gradient Curve Gradient Function	*On Target*	RISP 36 NRich Slide
	Differentiation of x^n and related sums and differences.	*Math 2 ∞ + beyond* BOTM Basic differentiation Harder differentiation	Differentiation Song *Match the Pairs; Teacher Notes*	True, Never, Sometimes; Teacher Notes	*C3 MATCHING FUNCTIONS AND DERIVATIVES* *C4 DIFFERENTIATING FRACTIONAL AND NEGATIVE POWERS*
	Applications of differentiation to gradients, tangents and normals.	MUM Differentiation BOTM Finding gradients Tangents and normals	*Unjumble; Teacher Notes*	*Mathsnet Exam Questions* PROBING QUESTIONS	
	Things to make you go hmmmmmm…….				

C1 (EDEXCEL)

Topic	Objectives	ICT Resources including Bring on the Maths (BOTM) Match Up Maths (MUM)	GlosMaths Resources	Assessment	Success For All and other resources
Integration	**Prior Knowledge:** ☺ *Find areas of shapes made from triangles, rectangles, parallelograms and trapezia* ☺ *Use index laws to simplify and calculate the value of expressions involving multiplication and division of integer powers, zero powers, fractional and negative powers;*				
	Indefinite integration as the reverse of differentiation.	BOTM Basic Integration MUM Integration	Fundamental Theorem of Calculus(FTC) *Matching Pairs: Teacher Notes* *Integration loop (x^4+c)*	On Target	
	Integration of x^n.	*BOTM* The 4 f's – finding f from f' Harder Integration Maths 2∞ + beyond	Partners Please; Teacher Notes Poems and Songs	True, Never, Sometimes; Teacher Notes *Mathsnet Exam Questions* PROBING QUESTIONS	*C4 INTEGRATING FRACTIONAL AND NEGATIVE POWERS*
	Things that to make you go hmmmmmm…….				

Formulae that students are expected to remember and that may not be included in formulae booklets.

Quadratic equations

$ax^2 + bx + c = 0$ has roots $\dfrac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

Differentiation

Function	Derivative
x^n	nx^{n-1}

Integration

Function	Integral
x^n	$\dfrac{1}{n+1}x^{n+1} + c,\ n \neq -1$

C2 (EDEXCEL)

Topic	Objectives	ICT Resources including Bring on the Maths (BOTM) Match Up Maths (MUM)	GlosMaths Resources	Assessment	Success For All and other resources
Algebra and Functions	**C2 Mindmap**				
	Prior Knowledge: ☺ *Manipulate algebraic expressions by collecting like terms, multiplying a single term over a bracket, taking out common factors, expand the product of two linear expressions eg (ax ± p)(bx ± q); factorising quadratic expressions including the difference of two squares and cancelling common factors in rational expressions* ☺ *Written method of long division*				
	Simple algebraic division;	*BOTM* Long division		*On Target*	
	Use of the Factor Theorem	*BOTM* Factor Theorem Theorem mix		True, Never, Sometimes; Teacher Notes	*A11 FACTORISING CUBICS*
	Use of the Remainder Theorem	*BOTM* Remainder Theorem I Remainder Theorem II Theorem mix		*Mathsnet Exam Questions*	RISP 11
	Things to make you go hmmmmmm…….				

C2 (EDEXCEL)

Topic	Objectives	ICT Resources including Bring on the Maths (BOTM) Match Up Maths (MUM)	GlosMaths Resources	Assessment	Success For All and other resources
Co-ordinate geometry in the (x,y) plane	**Prior Knowledge:** ☺ *Solve quadratic equations by factorisation, completing the square and using the quadratic formula* ☺ *Recall the definition of a circle and the meaning of related terms, including centre, radius, chord, diameter, circumference, tangent, arc, sector and segment* ☺ *Understand that the tangent at any point on a circle is perpendicular to the radius at that point; understand and use the fact that tangents from an external point are equal in length; explain why the perpendicular from the centre to a chord bisects the chord; understand that inscribed regular polygons can be constructed by equal division of a circle; prove and use the facts that the angle subtended by an arc at the centre of a circle is twice the angle subtended at any point on the circumference, the angle subtended at the circumference by a semicircle is a right angle, that angles in the same segment are equal, and that opposite angles of a cyclic quadrilateral sum to 180 degrees; prove and use the alternate segment theorem* ☺ *Construct the graphs of simple loci, including the circle $x^2 + y^2 = r^2$ for a circle of radius r centred at the origin of coordinates*				
	Coordinate geometry of the circle using the equation of a circle in the form $(x-a)^2 + (y-b)^2 = r^2$ and including the use of the following circle properties: **i) the angle in a semicircle is a right angle;** **ii) the perpendicular from the centre to a chord bisects the chord;** **iii) the perpendicularity of the radius and tangent.**	BOTM *Completing the square* Circles I Circles II	Completing the square song 1 Completing the square song 2 *Dizzy; Teacher Notes* *Matching Cards Teacher Notes*	*On Target* *Treasure Hunt; Teacher Notes* True, Never, Sometimes; Teacher Notes *Mathsnet Exam Questions*	RISP 9 RISP 15 **NRich** Orthogonal Circle Baby Circle
	Things to make you go hmmmmmm…….				

C2 (EDEXCEL)

Topic	Objectives	ICT Resources including Bring on the Maths (BOTM) Match Up Maths (MUM)	GlosMaths Resources	Assessment	Success For All and other resources
Sequences and series	**Prior Knowledge:** ☺ *Multiply and divide fractions* ☺ *Generate common integer sequences (including sequences of odd or even integers, squared integers, powers of 2, powers of 10, triangular numbers)* ☺ *Generate terms of a sequence using term-to-term and position-to-term definitions of the sequence* ☺ *Plot graphs of the exponential function $y = k^x$ for integer values of x and simple positive values of k* ☺ *Manipulate algebraic expressions by collecting like terms, multiplying a single term over a bracket, taking out common factors, expand the product of two linear expressions eg (ax ± p)(bx ± q); factorising quadratic expressions including the difference of two squares and cancelling common factors in rational expressions*				
	The sum of a finite geometric series; the sum to infinity of a convergent geometric series, including the use of |r|<1	BOTM Identifying GPs Geometric progressions *Infinite sums* Pocket Money Scam EXCEL Pocket Money	Introducing Sequences and Series Introducing GP - Powers of 10 *TRIO; Teacher Notes* *Proof Unjumble* GP Loop Kangaroo Love; Teacher Notes Does 0.9999… = 1? Do the GS Conga	*On Target* True, Never, Sometimes; Teacher Notes *Treasure Hunt; Teacher Notes*	N13 ANALYSING SEQUENCES RISP 14 RISP 20 **NRich** Clickety Click and All the Sixes

C2 (EDEXCEL)

Topic	Objectives	ICT Resources including Bring on the Maths (BOTM) Match Up Maths (MUM)	GlosMaths Resources	Assessment	Success For All and other resources
	Binomial expansion of $(1+x)^n$ for a positive integer n. **The notations of n! and $\binom{n}{r}$**	BOTM Notation Binomial Expansion I Binomial Expansion II *MUM Binomial Expansion*	The 'Nice' Lottery Pascal and the Lottery *Coefficient Loop*	*Mathsnet Exam Questions* **NRich** Tens (proofs use Bimomial Theorem and other methods) Summit Binomial	
Things to make you go hmmmmmm…….					

C2 (EDEXCEL)

Topic	Objectives	ICT Resources including Bring on the Maths (BOTM) Match Up Maths (MUM)	GlosMaths Resources	Assessment	Success For All and other resources
Trigonometry	**Prior Knowledge:** ☺ *Find circumferences of circles and areas enclosed by circles, recalling relevant formulae* ☺ *Calculate the lengths of arcs and the areas of sectors of circles* ☺ *Understand, recall and use Pythagoras' theorem in 2D, then 3D problems* ☺ *Understand, recall and use trigonometrical relationships in right-angled triangles, and use these to solve problems, including those involving bearings, then use these relationships in 3D contexts, including finding the angles between a line and a plane (but not the angle between two planes or between two skew lines)* ☺ *Calculate the area of a triangle using ½ a b sin C* ☺ *Draw, sketch and describe the graphs of trigonometric functions for angles of any size, including transformations involving scalings in either or both the x and y directions* ☺ *Use the sine and cosine rules to solve 2D and 3D problems*				
	The sine and cosine rules; Area of a triangle = ½absinC	*BOTM* Sine and Cosine Rules	What is trig? Area of a Triangle Song Sine Rule Song	*On Target*	RISP 24 **NRich** Cosines Rule Hexi-metry (cosine rule) Pythagoras for a Tetrahedron (cosine rule, area formula)
	Radian measure, including use for arc length and area of sector.	Maths 2 ∞ + beyond *BOTM* Radians Circle Problems		True, Never, Sometimes; Teacher Notes	RISP 23 **NRich** Pericut Quadarc
	Sine, cosine and tangent functions. Their graphs, symmetries and periodicity.	GSP Trig graphs AUTOGRAPH Transforming Graphs, Teacher Notes Plotting Trig Functions	The Unit Circle *TRIO (Graphs); Teacher Notes*		A12 EXPLORING TRIGONOMETRICAL GRAPHS RISP 29

C2 (EDEXCEL)

Topic	Objectives	ICT Resources including Bring on the Maths (BOTM) Match Up Maths (MUM)	GlosMaths Resources	Assessment	Success For All and other resources
	Knowledge and use of tanx = sinx/cosx and $\sin^2\theta + \cos^2\theta = 1$.	BOTM Graphs Common Angles I Common Angles II MUM Basic Trig Basic angles (radians) Basic angles(degrees)	Graphs Special Angles Special Angles Match Teacher Notes *Trig Loop Degrees* *Trig Loop Radians* Happy Families; Teacher Notes		
	Solution of simple trigonometric equations in a given interval.	BOTM Solving Equations I Solving Equations II	Trig Snap Unjumble easy Unjumble hard ; Teacher notes *TRIO (10 versions!); Teacher Notes* Follow on Cards (Degrees); Teacher Notes Follow on Cards (Radians); Teacher Notes Trig Equation Hierachy Trig song	*Treasure Hunt (Degrees); Teacher Notes* *Treasure Hunt (Radians) Teacher Notes* Ivor Cocked Up; Teacher Notes Cue Cards Teacher Notes *Mathsnet Exam Questions*	
	Things to make you go hmmmmmm…….				

C2 (EDEXCEL)

Topic	Objectives	ICT Resources including Bring on the Maths (BOTM) Match Up Maths (MUM)	GlosMaths Resources	Assessment	Success For All and other resources
Exponentials and Logarithms	**Prior Knowledge:** ☺ *Mental methods to recall integer squares from 2 * 2 to 15 * 15 and the corresponding square roots, the cubes of 2, 3, 4, 5 and 10, the fact that $n^0 = 1$ and $n^{-1} = 1$ divided by n for positive integers n [for example, $10^0 = 1$; 9^{-1} = one-ninth] , the corresponding rule for negative numbers [for example, $5^{-2} = 1$ divided by 5^2 = one-twenty-fifth] , n to the power half = square root n and n to the power one-third = cube root n for any positive number n [for example, 25 to the power half = 5 and 64 to the power one-third = 4]* ☺ *Plot graphs of the exponential function $y = k^x$ for integer values of x and simple positive values of k* ☺ *Use index laws to simplify and calculate the value of expressions involving multiplication and division of integer powers, zero powers, fractional and negative powers (C1)*				
	$y = a^x$ and its graph	BOTM Exponential graphs EXCEL Pocket Money AUTOGRAPH $y = a^x$;Teacher Notes Maths 2 ∞ + beyond Indices	Asian Tsunami/Pocket Money Scam Starter Problems *Graph Loop* Exponent Song	*On Target* True, Never, Sometimes; Teacher Notes	

C2 (EDEXCEL)

Topic	Objectives	ICT Resources including Bring on the Maths (BOTM) Match Up Maths (MUM)	GlosMaths Resources	Assessment	Success For All and other resources
	The laws of logarithms	BOTM Logarithm Laws Changing bases MUM Log laws	History - John Napier *TRIO; Teacher Notes* Evaluating Log Loop; Teacher Notes Evaluating Log Follow on; Teacher Notes Musical Logs; Teacher Notes Match your logs; Teacher Notes Proof of the laws; Student sheet *Log Laws Loop I; Loop 2 Teacher Notes* ATM 1955 Solution		*A13 SIMPLIFYING LOGARITHMIC EXPRESSIONS* RISP 31 **NRich** Log On
	The solution of equations of the form $a^x = b$	BOTM *Logarithmic equations* *Exponential equations* Harder equations	*'Simple' Follow on; Teacher Notes* Horrid equations Horrid Loop & Teacher Notes Answers Hard Follow on;	*Treasure Hunt; Teacher Notes* Ivor Cocked Up; Teacher Notes *Mathsnet Exam Questions*	**NRich** Log Attack How many?
		Things to make you go hmmmmmm…….			

C2 (EDEXCEL)

Topic	Objectives	ICT Resources including Bring on the Maths (BOTM) Match Up Maths (MUM)	GlosMaths Resources	Assessment	Success For All and other resources
Differentiation	**Prior Knowledge:** ☺ *Generate points and plot graphs of simple quadratic functions [for example, $y = x^2$; $y = 3x^2 + 4$] , then more general quadratic functions [for example, $y = x^2 - 2x + 1$]* ☺ *Plot graphs of more complex quadratic and cubic functions; estimate values at specific points, including at maxima and minima* ☺ *Differentiation of x^n and related sums and differences.* ☺ *Applications of differentiation to gradients, tangents and normals.*				
	Applications of differentiating to maxima and minima and stationary points, increasing and decreasing functions.	BOTM Stationary Points Maxima and Minima Healthy Chips *Increasing and decreasing* Rollercoaster 1 Rollercoaster 2 Maths 2 ∞ + beyond	Maxmin Investigation; Teacher notes Happy Mother's Day; Teacher Notes *TRIO; Teacher Notes* Chip or Wedge	*On Target* True, Never, Sometimes; Teacher Notes *Mathsnet Exam Questions*	C2 FUNCTIONS INVOLVING FRACTIONAL AND NEGATIVE POWERS C3 MATCHING FUNCTIONS WITH DERIVATIVES *C5 - FINDING STATIONARY POINTS OF CUBIC FUNCTIONS* RISP 6 RISP 7 **NRich** Witch of Agnesi
	Things to make you go hmmmmmm…….				

C2 (EDEXCEL)

Topic	Objectives	ICT Resources including Bring on the Maths (BOTM) Match Up Maths (MUM)	GlosMaths Resources	Assessment	Success For All and other resources
Integration	**Prior Knowledge:** ☺ *Indefinite integration as the reverse of differentiation* ☺ *Integration of x^n.* ☺ *Find areas of shapes made from triangles, rectangles, parallelograms and trapezia*				
	Evaluation of definite integrals.	Maths 2∞ + beyond BOTM *Definite Integration I* Definite Integration II		*On Target*	
	Interpretation of the definite integral as the area under a curve.	BOTM Evaluating areas I Evaluating area I Harder Integration I	FTC vs Summation Area under a curve practical Teacher Notes *Matching Cards; Teacher Notes*	*Treasure Hunt Teacher Notes*	RISP 25 NRich Area L
	Approximation of area under a curve using the trapezium rule.	*BOTM* Trapezium Rule I Trapezium Rule II Trapezium Rule III	Why is the area below the axis negative? *The Severn Tunnel Problem Teacher Notes*	True, Never, Sometimes; Teacher Notes *Mathsnet Exam Questions*	
	Things to make you go hmmmmmm…….				

Formulae that students are expected to remember and that may not be included in formulae booklets.

Laws of logarithms

$$\log_a x + \log_a y \equiv \log_a (xy)$$

$$\log_a x - \log_a y \equiv \log_a \left(\frac{x}{y}\right)$$

$$k \log_a x \equiv \log_a \left(x^k\right)$$

Trigonometry

In the triangle ABC

$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

area = $\frac{1}{2} ab \sin C$

Area

Area under a curve $= \int_a^b y \, \mathrm{d}x \quad (y \geq 0)$

MECHANICS 1 SCHEME OF WORK

Topic	Objectives	Notes	Resources	ICT	Formal Homework
Mathematical Models in Mechanics (1 lesson)	The basic ideas of mathematical modelling as applied in Mechanics	Candidates should be familiar with the terms: particle, lamina, rigid body, rod (light, uniform, non-uniform), inextensible string, smooth and rough surface, light smooth pulley, bead, wire, peg. Candidates should be familiar with the assumptions made in using these models.	1.1 1.2		
Vectors in Mechanics (5 lessons)	Magnitude and direction of a vector. Resultant of vectors may also be required. Application of vectors to displacements, velocities, accelerations and forces in a plane.	 Candidates may be required to resolve a vector into two components or use a vector diagram. Questions may be set involving the unit vectors **i** and **j**. Use of $velocity = \frac{change\,of\,displacement}{time}$ the case of constant velocity, and of $acceleration = \frac{change\,of\,velocity}{time}$ in the case of constant acceleration, will be required.	2.1 2.2 2.3 Forces 2.4	Use of Autograph Vector Functions	R E 1 Qu29 Qu10 Qu28
Kinematics of a particle moving in a straight line (5 lessons)	Motion in a straight line with constant acceleration	Graphical solutions may be required, including displacement-time, speed-time and acceleration-time graphs. Knowledge and use of formulae for constant acceleration will be required.	3.1 3.2 3.3 Acceleration equations		R E 1 Qu17 Qu33 Qu32

continued >

MECHANICS 1 SCHEME OF WORK

Topic	Objectives	Notes	Resources	ICT	Formal Homework
Statics of a particle (5 lessons)	Forces treated as vectors. Resolution of forces. Equilibrium of a paticle under coplanar forces. Weight, normal reaction, tension and thrust, friction Coefficient of friction	 Only simple cases of the application of the conditions for equilibrium to uncomplicated systems will be required. An understanding of $F = \mu R$ is a situation of equilibrium.	4.1 4.2 4.3 4.4 4.5 4.6 4.7		R E 2 Qu4 Qu5 Qu6
Review and Test (2 lessons)		TEST 1			

MECHANICS 1 SCHEME OF WORK

Topic	Objectives	Notes	Resources	ICT	Formal Homework
Dynamics of a particle moving in a straight line or plane (10 lessons)	The concept of a force. Newton's laws of Motion. Simple applications including the motion of two connected particles. Momentum and impulse. The impulse-momentum principle. The principle of conservation of momentum applied to two particles colliding directly. Coefficient of friction.	Simple problems involving constant acceleration in scalar form or as a vector of the form a**i** + b**j**. Problems may include i) the motion of two connected particles moving in a straight line or under gravity when the forces on each particle are constant; problems involving smooth fixes pulleys and/or pegs may be set. ii) Motion under a force which changes from one fixed value to another, eg a particle hitting the ground. iii) Motion directly up or down a smooth or rough inclined plane. Knowledge of Newton's law of restitution is not required. Problems will be confined to those of a one dimensional nature. An understanding of F=⇑R when a particle is moving.	5.1 5.2 5.3 4.7	Data logging (physics software)	R E 2 Qu19 Qu15 Qu29
Moments (6 lessons)	Moments of a force.	Simple problems involving coplanar parallel forces acting on a body and conditions for equilibrium in such situations.	6.1 6.2		R E 2 Qu33 Qu 34 Qu 45
Review and Test (2 lessons)		TEST 2			