

Curriculum Map – GCSE Higher Mathematics

Learning Phase 2 – Year 11		
Knowledge	Skills	Rationale
ALL students cover:	Through the mathematics content, pupils are taught to:	The order in which topics are taught are as recommended by the Route Map provided by AQA, the exam board which we use. However, faculty time and INSET time were used to check/amend hours needed for each unit of work eg. Unit 29 Algebra: Quadratics was extended to 10 hours from 8 hours for the higher groups. Unit 30 Scatter Graphs was reduced from 4 hours for both higher and lower groups as explained below.
Unit Topic	Develop fluency	
29 Algebra: quadratics, rearranging formulae and identities	consolidate their numerical and mathematical capability from key stage 3	
30 Scatter graphs	select and use appropriate calculation strategies to solve increasingly complex problems	
31 Numerical methods		
32 Equation of a circle	consolidate their algebraic capability from key stage 3 and extend their understanding of algebraic simplification and manipulation to include quadratic expressions, {and expressions involving surds and algebraic fractions}	
33 Further equations and graphs		
34 Simultaneous equations		
35 Sketching graphs		
36 Direct and inverse proportion	extend fluency with expressions and equations from key stage 3, to include quadratic equations, simultaneous equations and inequalities	
37 Inequalities		
38 Pythagoras’ theorem and basic trigonometry	move freely between different numerical, algebraic, graphical and diagrammatic representations, including of linear, quadratic, reciprocal, {exponential and trigonometric} functions	
39 Growth and decay		
40 Vectors	use mathematical language and properties precisely	
41 Transforming functions		
42 Sine and cosine rules		
43 Circle Theorems		
44 Gradients and rate of change		
45 Pre-calculus and area under a curve		
46 Algebraic fractions	Reason mathematically - extend and formalise their knowledge of ratio and proportion, including trigonometric ratios, in working with measures and geometry, and in working with proportional relations algebraically and graphically - extend their ability to identify variables and express relations between variables algebraically and graphically - make and test conjectures about the generalisations that underlie patterns and relationships; look for proofs or counter-examples; begin to use algebra to support and construct arguments {and proofs}	Differentiated schemes of work were then written – one for the higher groups sitting the Higher GCSE tier and one for the lower groups sitting the Higher GCSE tier. Example: higher groups spend 10 hours on Unit 29 Algebra: Quadratics as opposed to 8 hours for lower groups, lower groups spend 3 hours on Unit 30 Scatter Graphs as opposed to 2 hours for higher groups.
		The order of topics is determined generally by the knowledge and skills which are pre-requisites for future topics.
		The subject content matches that set out in the Department for Education’s Mathematics GCSE subject content and assessment objectives document, and is common to all exam boards.

- reason deductively in geometry, number and algebra, including using geometrical constructions
- interpret when the structure of a numerical problem requires additive, multiplicative or proportional reasoning
- assess the validity of an argument and the accuracy of a given way of presenting information

Solve problems

- develop their mathematical knowledge, in part through solving problems and evaluating the outcomes, including multi-step problems
- develop their use of formal mathematical knowledge to interpret and solve problems, including in financial contexts
- make and use connections between different parts of mathematics to solve problems
- model situations mathematically and express the results using a range of formal mathematical representations, reflecting on how their solutions may have been affected by any modelling assumptions
- select appropriate concepts, methods and techniques to apply to unfamiliar and non-routine problems; interpret their solution in the context of the given problem

Assessment 1 (NOV): First full GCSE Mock exam: Three 90 minute papers (Paper 1: Non-calculator, Paper 2: Calculator, Paper 3: Calculator).

Assessment 2 (MAR): Final full GCSE Mock exam: Three 90 minute papers (Paper 1: Non-calculator, Paper 2: Calculator, Paper 3: Calculator).

Assessment 3 (MAY/JUNE): GCSE Exam (external).

