

KEVICC Key Stage 4 Curriculum Subject: Mathematics			Key Vocabulary and notation.	
Spring Half-Term				
Term: Year 10 Spring Term – Block Six		Topic: Quadratics		
What is the essential knowledge from this unit? What do students need to remember and understand?				
	Specification content	Specification notes		
A4	Simplify and manipulate algebraic expressions (<u>including those involving surds</u>) by: <ul style="list-style-type: none"> collecting like terms multiplying a single term over a bracket taking out common factors <u>expanding products of two binomials</u> <u>factorising quadratic expressions of the form $x^2 + bx + c$ including the difference of two squares</u> simplifying expressions involving sums, products, and powers, including the laws of indices 			
Students should be able to: <ul style="list-style-type: none"> understand that algebra can be used to generalise the laws of arithmetic manipulate an expression by collecting like terms write expressions to solve problems write expressions using squares and cubes factorise algebraic expressions by taking out common factors multiply two linear expressions, such as $(x \pm a)(x \pm b)$ and $(cx \pm a)(dx \pm b)$, for example $(2x + 3)(3x - 4)$ multiply a single term over a bracket, for example, $a(b + c) = ab + ac$ know the meaning of and be able to simplify, for example $3x - 2 + 4(x + 5)$ know the meaning of and be able to factorise, for example $3x^2y - 9y$ or $4x^2 + 6xy$ factorise quadratic expressions using the sum and product method, or by inspection (FOIL) factorise quadratics of the form $x^2 + bx + c$ factorise expressions written as the difference of two squares of the form $x^2 - a^2$ use the index laws for multiplication and division of integer powers. simplify algebraic expressions, for example by cancelling common factors in fractions or using index laws. 				
A4h	Simplify and manipulate algebraic expressions (<u>including those involving surds</u>) by: <ul style="list-style-type: none"> collecting like terms multiplying a single term over a bracket taking out common factors <u>expanding products of two binomials</u> <u>factorising quadratic expressions of the form $x^2 + bx + c$ including the difference of two squares</u> simplifying expressions involving sums, products, and powers, including the laws of indices 			
Students should be able to: <ul style="list-style-type: none"> multiply two or more binomial expressions factorise quadratic expressions of the form $ax^2 + bx + c$ simplify by factorising and cancelling expressions of the form $\frac{ax^2+bx+c}{dx^2+ex+f}$ 				
A18	<u>Solve quadratic equations (including those that require rearrangement) algebraically by factorising, by completing the square and by using the quadratic formula</u>	Extend to completing the square and quadratic formula as appropriate (time constraints) Topic explored in year 11 scheme of work.		
Students should be able to: <ul style="list-style-type: none"> solve quadratic equations by factorising read approximate solutions from a graph. solve quadratic equations by factorising, completing the square or using the quadratic formula solve geometry problems that lead to a quadratic equation that can be solved by using the quadratic formula read approximate solutions from a graph. 				
A21	<u>Translate simple situations or procedures into algebraic expressions or formulae; derive an equation (or two simultaneous equations), solve the equation(s) and interpret the solution</u>	Including solution of geometrical problems and problems set in context..		
			Expression	Unknown
			Simplify	Solution
			Term	FOIL
			Substitute	Side
			Coefficient	Form
			Equivalent	Unknown
			Positive	Check
			Negative	Inequality
			Directed	Satisfy
			Substitute	Solution set
			Solve	Greater/less
			Simplify	than (or
			Expand	equal)
			Multiply out	Inequality
			Bracket	Form
			Identity	Balance
			Product	Formula
			Factor	Variable
			Factorise	Subject
			Factorise	Factor
			fully	Identities
			Common	Terms
			Common	Expanding
			factor	products
			Make the	Surds
			subject of	Quadratics
			Unlike terms	$x^2 + bx + c$
			Binomial	$(x \pm a)(x \pm b)$
			Simplify	$ax^2 + bx + c$
			Solve	$(cx \pm a)(dx \pm b)$
			Equation	
			Mathematical questioning should be designed to unpick the structure of the maths and deepen the student's understanding. When students talk about mathematical concepts, they should develop the vital mathematical language that helps them explain their ideas fully.	
			Students are expected and encouraged to use terminology during all discussions, verbal feedback and in written content.	

<p>Students should be able to:</p> <ul style="list-style-type: none">• set up simple linear equations• rearrange simple linear equations• set up simple linear equations to solve problems• set up a pair of simultaneous linear equations to solve problems• interpret solutions of equations in context.		
<p>What prior learning supports understanding of this content?</p> <ul style="list-style-type: none">• Simplify and manipulate algebraic expressions (including those involving surds) by:<ul style="list-style-type: none">◦ Collecting like terms.◦ Multiplying a single term over a bracket.◦ Taking out common factors.◦ Expanding products of two binomials.◦ Factorising quadratic expressions of the form $x^2 + bx + c$ including the difference of two squares.◦ Simplifying expressions involving sums, products, and powers, including the laws of indices.	<p>How does this content link to future learning?</p> <ul style="list-style-type: none">• Understand and use standard mathematical formulae<ul style="list-style-type: none">◦ Rearrange formulae to change the subject, including use of formulae from other subjects in words and using symbols.	
<p>Reading: <i>Where in the unit are students supported to read complex academic text?</i></p> <ul style="list-style-type: none">• Reading and understanding mathematical questions and problems' – teacher input.• Decoding complex examination questions - explain what they are asking the student to do' – teacher input.• Following instructions to solve problems - break down the tasks – teacher input.• Recognising terminology, numbers, and symbols.	<p>Writing: <i>Independent writing tasks and how they are structured</i></p> <ul style="list-style-type: none">• Using the correct subject specific terminology for numbers and symbols – examination papers, class books.• Responding to questions that ask for an explanation or a reason – examination papers, class books.• Self-evaluation, reviewing, reflecting and analysis of own work – class books, personalised learning checklists and analysis.• Creating notes that can be used later for revision purposes - class books, revision cards, mind maps etc.	
<p>Key assessments:</p> <p>How will do students review the information learned?</p> <p>End of block assessments.</p> <p>AQA end of block assessments provide a quick progress check at the end of each block of learning to make sure students have understood the content being covered. These are available for both foundation and higher tiers.</p> <p>End of term/year assessments and mock examinations.</p> <p>End of term assessments assessing the students' progress towards targets and provide diagnostic information to modify future teaching.</p> <p>End of year 9 and 10 examinations assessing the students' progress towards targets and provide diagnostic information to modify future teaching.</p> <p>Two mock examinations seasons take place during year 11 using previous years AQA 8300 examination papers. Students to experience the full suite of papers at both Foundation and higher tiers using Non-calculator and Calculator requirements.</p> <p>All examinations will explore the three examination papers at both foundation and higher tiers using non-calculator and calculator requirements.</p> <p>How will feedback be seen?</p> <p>Marked end of block, term assessments and mock examinations.</p> <p>Personalised learning checklists for all assessments identifying strengths and areas of development.</p> <p>Written teacher feedback and marking in compliance with faculty and College Marking Policies. Student responses to marking. Students self-mark using purple pen. Verbal feedback given every lesson from teacher and peers as appropriate. Teacher and student self-assessment of presentation of class books will be completed to ensure written work is of high standard and students are achieving their potential</p>		