KEVICC Key Stage 4 Curriculum Subject: Mathematics		Key Vocabulary and notation.
Spring Half-Term		
Term: Year 11 Spring Term – Block Three	**Topic:** Quadratic Graphs	

What is the essential knowledge from this unit?
What do students need to remember and understand?

	Specification content	Specification notes
A12	Recognise, sketch and interpret graphs of linear functions, quadratic functions	

Students should be able to:
- draw, sketch, recognise and interpret linear functions
- calculate values for a quadratic and draw the graph
- draw, sketch, recognise and interpret quadratic graphs
- draw, sketch, recognise and interpret graphs of the form $y = x^3 + k$ where k is an integer
- draw, sketch, recognise and interpret the graph $y = \frac{1}{x}$ with $x \neq 0$
- find an approximate value of y for a given value of x, or the approximate values of x for a given value of y.

A11	Identify and interpret roots, intercepts and turning points of quadratic functions graphically; deduce roots algebraically	including the symmetrical property of a quadratic

Students should be able to:
- interpret quadratic graphs by finding roots, intercepts and turning points.

Key Vocabulary and notation:

Parallel	Interception
Horizontal	Solutions
Vertical	Perpendicular
Straight line	Product
Axis	Reciprocal
Equation	Negative
Graph	Reciprocal
Intercept	Positive
Linear	Negative
Table of values	Estimate
	Curve
y-intercept	Asymptote
Scale	Infinity
Slope	Tends towards
Steep	Quadratic
Interpret	Roots
Line	Solution
Point	Meets
Coordinates	$x^2 + bx + c$
Substitute	$(x \pm a)(x \pm b)$
Satisfies	$ax^2 + bx + c$
Below	$(cx \pm a)(dx \pm b)$
Above	

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.

What prior learning supports understanding of this content?
- Recognise that equations of the form $y = mx + c$ correspond to straight-line graphs in the coordinate plane
- Draw graphs of functions in which y is given explicitly or implicitly in terms of x
- Complete tables of values for straight-line graphs
- Calculate the gradient of a given straight-line given two points or from an equation
- Manipulate the equations of straight lines so that it is possible to tell whether lines are parallel or not
- Work out the equation of a line, given two points on the line or given one point and the gradient.

How does this content link to future learning?
- Consolidate simplifying and manipulate algebraic expressions by:
  - 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.
- Consolidate solving quadratic equations algebraically by factorising from key stage 4.
- Consolidate subject content straight line, quadratic, cubic, and reciprocal graphs from key stage 4.
- Revise and explore subject content through examination questions and in context.

Reading: *Where in the unit are students supported to read complex academic text?*
- 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.

Writing: *Independent writing tasks and how they are structured*
- 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.

Key assessments:

How will do students review the information learned?

End of block assessments.

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.

End of term/year assessments and mock examinations.

End of term assessments assessing the students' progress towards targets and provide diagnostic information to modify future teaching.

End of year 9 and 10 examinations assessing the students' progress towards targets and provide diagnostic information to modify future teaching.

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.

All examinations will explore the three examination papers at both foundation and higher tiers using non-calculator and calculator requirements.

How will feedback be seen?

Marked end of block, term assessments and mock examinations.

Personalised learning checklists for all assessments identifying strengths and areas of development.

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.