KEVICC Key Stage 4 Curriculum Subject: Mathematics	Key Vocabulary and notation.

Autumn Half-Term

Term: Year 10 Autumn Term – Block Eight	Topic: Simultaneous Equations - Linear

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

	Specification content	Specification notes
A17	Solve linear equations in one unknown algebraically <u>including those with the unknown on both sides of the equation</u> Find approximate solutions using a graph	<u>including use of brackets</u>

Students should be able to:
- solve simple linear equations by using inverse operations or by transforming both sides in the same way
- solve simple linear equations with integer coefficients where the unknown appears on one or both sides of the equation or where the equation involves brackets.

A19	<u>Solve two simultaneous equations in two variables (linear / linear **or** quadratic/linear) algebraically</u> <u>Find approximate solutions using a graph including the approximate solution of a quadratic equation by drawing a straight line to intersect with another quadratic equation</u>	

Students should be able to:
- solve simultaneous linear equations by elimination or substitution or any other valid method
- find approximate solutions using the point of intersection of two straight lines.

A19h	<u>Solve two simultaneous equations in two variables (linear / linear **or** quadratic/linear) algebraically</u> <u>Find approximate solutions using a graph including the approximate solution of a quadratic equation by drawing a straight line to intersect with another quadratic equation</u>	including the solution of geometrical problems and problems set in context

Students should be able to:
- solve simultaneous equations when one is linear and the other quadratic
- appreciate that the solution of $f(x) = a$ is found where $y = a$ intersects with $y = f(x)$
  e.g. the points of intersection of the graphs of $y = x^2 + 3x – 10$ and $y = 2x + 1$ are the solutions to the equation $x^2 + 3x – 10 = 2x + 1$ or $x^2 + x – 11 = 0$

A21	<u>Translate simple situations or procedures into algebraic expressions or formulae; derive two simultaneous equations</u> <u>Solve the equations and interpret the solution</u>	including the solution of geometrical problems and problems set in context

Students should be able to:
- 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.

Key Vocabulary and notation.

Possible	Eliminate
Solution	Expression
Infinite	Add
Finite	Subtract
Variables	Negative
Equation	Equivalent
Substitute	Coefficient
Variable	Multiplier
Verify	Lowest
Solve	common
Solution	multiple
Unknown	Formulate
Inverse	Context
Substitution	Linear
Subject of	Quadratic
the formula	Curve
Rearrange	Square
Simultaneous	Intersection
equations	Non-linear
Intersect	Factorise
Coordinate	Simplest form
Meet	In terms of

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?
- Simplify algebraic expressions.
- Substitute numerical values into formulae and expressions.
- Apply the four operations (+, -, x, ÷) to fractions.
- Expand brackets and collect like terms.
- Factorising expressions.
- Form and solve one-step and two-step equations.
- Understand equivalence of algebraic expressions.
- Substitute numerical values into formulae and expressions.

How does this content link to future learning?
- Simplify and manipulate algebraic expressions (including those involving surds) by:
  - 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.
- Understand and use standard mathematical formulae.
- Rearrange formulae to change the subject, including use of formulae from other subjects in words and using symbols.

Reading: *Where in the unit are students supported to read complex academic text?*	**Writing:** *Independent writing tasks and how they are structured*
• 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.	• 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.