KEVICC Key Stage 4 Curriculum Subject: Mathematics

Spring Half-Term

Term: Year 11 Spring Term – Block Two | **Topic: Vectors**

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

	Specification content	Specification notes
G25	Apply addition and subtraction of vectors, multiplication of vectors by a scalar, and diagrammatic and column representation of vectors **Use vectors to construct geometric arguments and proofs**	
Students should be able to: • understand and use vector notation • calculate and represent graphically the sum of two vectors, the difference of two vectors and a scalar multiple of a vector • calculate the resultant of two vectors • understand and use the commutative and associative properties of vector addition.		
G25h	Apply addition and subtraction of vectors, multiplication of vectors by a scalar, and diagrammatic and column representation of vectors **Use vectors to construct geometric arguments and proofs**	
Students should be able to: • solve simple geometrical problems in 2D using vector methods • apply vector methods for simple geometric proofs • recognise when lines are parallel using vectors • recognise when three or more points are co-linear using vectors • use vectors to show three or more points are collinear.		

Key Vocabulary and notation.

Vector notation	x-component
Vector notation	y-component
Column representation	Parallel vectors
Translation	Positive
Transforms	Negative
Addition	Components
Subtraction	Opposite
Multiplication	Direction
Scalar	Algebra
Diagrammatic	Multiple
Resultant	Original vector
Commutative	Final
Properties	destination
Associative	Direction of a vector
properties	Congruent
Diagram	parallelograms
Letters	Origin
Directed line segment	Vector geometry
Displacement	Quadrilateral
Displacement vectors	Trapezium
Magnitude	Hexagon
Column Vectors	Relationship
Left/Right	Midpoint
Up/Down	Simplifying
	Ratio
	Expression

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?

- Describe and transform 2D shapes using translations
- Understand that translations are specified by a distance and direction (using a vector).
- Translate a given shape by a vector.
- Use and interpret algebraic notation.
- Simplify and manipulate algebraic expressions.
- Divide a given quantity into two parts in a given: part : part or part : whole ratio

How does this content link to future learning?

- Apply and prove the standard circle theorems concerning angles, radii, tangents, and chords and use them to prove related results Including:
  - cyclic quadrilaterals;
  - angle at centre is equal to twice angle at circumference;
  - angle in a semi-circle is 90°;
  - angles in the same segment are equal;
  - opposite angles in a cyclic quadrilateral sum to 180°;
  - the angle between tangent and radius is 90°;
  - tangents from an external point are equal in length;
  - the perpendicular from the centre to a chord bisects the chord;
  - alternate segment theorem;

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.