KEVICC Key Stage 4 Curriculum Subject: Mathematics		**Key Vocabulary and notation.**
Spring Half-Term		
Term: Year 10 Spring Term – Block Seven	**Topic: Trigonometry, 3D Trig, Sine and Cosine Rule**	

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

	Specification content	**Specification notes**
G20	Know the formulae for: Pythagoras' theorem, $a^2 + b^2 = c^2$, and the trigonometric ratios, $\sin\theta = \frac{opposite}{hypotenuse}$ $\cos\theta = \frac{adjacent}{hypotenuse}$ $\tan\theta = \frac{opposite}{adjacent}$ apply them to find angles and lengths in right-angled triangles in two dimensional figures	
Students should be able to: • understand, recall, and use Pythagoras' theorem in 2D problems • understand, recall, and use trigonometric relationships in right-angled triangles • use the trigonometric relationships in right-angled triangles to solve problems, including those involving bearings.		
G20h	Know the formulae for: Pythagoras' theorem, $a^2 + b^2 = c^2$, and the trigonometric ratios, $\sin\theta = \frac{opposite}{hypotenuse}$ $\cos\theta = \frac{adjacent}{hypotenuse}$ $\tan\theta = \frac{opposite}{adjacent}$ apply them to find angles and lengths in right-angled triangles in two dimensional figures	
Students should be able to: • understand, recall, and use Pythagoras' theorem in 3D problems • understand, recall, and use trigonometry relationships in 3D problems • use these relationships in 3D contexts, including finding the angles between a line and a plane.		
G22h	Know and apply the Sine rule $\frac{a}{sinA} = \frac{b}{sinB} = \frac{c}{sinC}$ **and Cosine rule** $a^2 = b^2 + c^2 - 2bc\cos A$ **to find unknown lengths and angles**	
Students should be able to: • use the sine and cosine rules to solve 2D and 3D problems.		
G23h	**Know and apply** $\frac{1}{2}ab\sin C$ **to calculate the area, sides, or angles of any triangle**	
Students should be able to: • calculate the area of a triangle using $\frac{1}{2}ab\sin C$ • calculate the area of a triangle given the length of two sides and the included angle.		
G6	Apply angle facts, triangle congruence, similarity, and properties of quadrilaterals to conjecture and derive results about angles and sides including Pythagoras' Theorem and use known results to obtain simple proofs	
Students should be able to: • understand similarity • understand similarity of triangles and of other plane figures, and use this to make geometric inferences • identify shapes that are similar, including all squares, all circles, or all regular polygons with equal number of sides • recognise similar shapes when rotated, reflected or in different orientations • apply mathematical reasoning, explaining, and justifying inferences and deductions • show step-by-step deduction in solving a geometrical problem • state constraints and give starting points when making deductions.		
R12	Compare lengths using ratio notation; Make links to trigonometric ratios	
Students should be able to: • understand the effect of enlargement on perimeter • understand the effect of enlargement on areas of shapes • understand the effect of enlargement on volumes of shapes and solids		

Key Vocabulary and notation.

Pythagoras' Theorem	Angle
Formula	Lengths
Right Angle	Relationship
Adjacent	Trigonometric ratio
Opposite	Square
Hypotenuse	Square root
Right Angle	Sum
Triangle	Total
Non right-angle triangle	Substitute
Formula	Expression
Rearrange	Calculate
Subject	Proof
Subject of formula	Prove
Sine	Surds
Cosine	Exact value
Inverse	Simplifying
Plane	$\sin\theta$ $\sin^{-1}x$
Midpoint	$\cos\theta$ $\cos^{-1}x$
Perpendicular	$\tan\theta$ $\tan^{-1}x$
	Slope
	Diagonal

$$\sin\theta = \frac{opposite}{hypotenuse}$$

$$\cos\theta = \frac{adjacent}{hypotenuse}$$

$$\tan\theta = \frac{opposite}{adjacent}$$

$$\frac{a}{sinA} = \frac{b}{sinB} = \frac{c}{sinC}$$

$$a^2 = b^2 + c^2 - 2bc\cos A$$

$$\frac{1}{2}ab\sin C$$

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.

• compare the areas or volumes of similar shapes • understand, recall, and use trigonometry ratios in right-angled triangles.	

What prior learning supports understanding of this content? • Identify the opposite, adjacent and hypotenuse of a right-angled triangle. • Determine whether a triangle is right-angled. • Calculate missing sides and angles in right-angled triangles. • Know the formulae for Pythagoras' theorem, $a^2 + b^2 = c^2$, and the trigonometric ratios apply them to find angles and lengths in right-angled triangles in two dimensional figures.	**How does this content link to future learning?** • 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.
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.