KEVICC Key Stage 4 Curriculum Subject: Mathematics

Spring Half-Term

Term: Year 10 Spring Term – Block Three | **Topic: Introduction to Trigonometry**

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.	
R12	Compare lengths using ratio notation	
	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 • compare the areas or volumes of similar shapes • understand, recall, and use trigonometry ratios in right-angled triangles.	

Key Vocabulary and notation.

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

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?
- Identify 2-D shapes with 3-D shapes.
- Understand the language of faces, edges, and vertices.
- Calculate squares and square roots.
- Substitute numerical values into formulae and expressions.
- Identify the hypotenuse of a right-angled triangle.
- Determine whether a triangle is right-angled.
- Calculate missing sides in right-angled triangles.

How does this content link to future learning?
- Identify properties of the faces, surfaces, edges and vertices of cube, cuboids, prisms, cylinders, pyramids, cones, and spheres.
- Calculate the perimeter of a 2D shape and composite shapes (review of Year 9).
- Calculate the area of composite shapes (review of Year 9)
- Find the surface area of pyramids and composite solids.
- Know and apply formulae to calculate area of:
  - Triangles.
  - Parallelograms.
  - Trapezia.

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.