KEVICC Key Stage 4 Curriculum Subject: Mathematics

Spring Half-Term

Term: Year 11 Spring Term – Block Five | **Topic: Transforming Functions**

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

	Specification content	Specification notes
A13	**Sketch translations and reflections of a given function**	

Students should be able to:

- transform the graph of any function *f*(x) including: *f*(x) + *a*, f(x + *b*), – *f*(x) and *f*(–x) where *a* and *b* are integers
- recognise transformations of functions and be able to write down the function of a transformation given the original function.

Key Vocabulary and notation.

Function notation	Equation
Functions	Graph
Transformation	Sketch
Linear	x- coordinate
Quadratic	y- coordinate
Sine	Axes
Cosine	Vertically
Independent	Horizontally
Dependent	Represents
Mapping	Stretch
Evaluate	Stretches
Substitute	Multiply
Variable	Constant
Find the value	Scale factor
Translate	Parallel
Translating	x-axis
Vector	y-axis
$y = f(x)$	Combinations
$y = f(x) + a$	Trigonometric
$y = f(ax)$	graphs
$y = f(x + a)$	$y = \sin x$
$y = af(x)$	$y = \cos x$
	$y = \tan x$

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, describe, and construct congruent and similar shapes, including on co-ordinate axes, by considering rotation, reflection, translation and enlargement (including fractional and negative scale factors).
- Substitute numerical values into formulae and expressions, including scientific formulae.
- Recognise, sketch and interpret graphs of linear functions, quadratic functions, simple cubic functions, the reciprocal function, $y = \frac{1}{x}$ with $x \neq 0$, exponential functions $y = k^x$ for positive values of k, and the trigonometrical functions.

How does this content link to future learning?

- Set up, solve, and interpret the answers in growth and decay problems, including compound interest and work with general iterative processes.
- Find approximate solutions to equations numerically using iteration including the use of suffix notation in recursive formulae.

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.