KEVICC Key Stage 4 Curriculum Subject: Mathematics

Spring Half-Term

Term: Year 9 Spring Term – Block Four

Topic: Conversions and Real-Life Graphs

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

	Specification content	Specification notes
A14	Plot and interpret graphs (including reciprocal graphs **and exponential graphs**) and graphs of non-standard functions in real contexts, to find approximate solutions to problems such as simple kinematics problems involving distance, speed, and acceleration	including problems requiring a graphical solution

Students should be able to:
- plot a graph representing a real-life problem from information given in words, in a table or as a formula
- identify the correct equation of a real-life graph from a drawing of the graph
- read from graphs representing real-life situations; for example, work out the cost of a bill for so many units of gas or the number of units for a given cost, and also understand that the intercept of such a graph represents the fixed charge
- interpret linear graphs representing real-life situations; for example, graphs representing financial situations (e.g. gas, electricity, water, mobile phone bills, council tax) with or without fixed charges, and also understand that the intercept represents the fixed charge or deposit
- plot and interpret distance-time graphs
- interpret line graphs from real-life situations, for example conversion graphs
- interpret graphs showing real-life situations in geometry, such as the depth of water in containers as they are filled at a steady rate
- interpret non-linear graphs showing real-life situations, such as the height of a ball plotted against time.

R14h	Plot and interpret graphs (including reciprocal graphs **and exponential graphs**) and graphs of non-standard functions in real contexts, to find approximate solutions to problems such as simple kinematic problems involving distance, speed and acceleration

Students should be able to:
- draw an exponential graph
- understand the main features of an exponential graph.

R14	Interpret the gradient of a straight line as a rate of change

Students should be able to:
- interpret the meaning of the gradient as the rate of change of the variable on the vertical axis compared to the horizontal axis.

Key Vocabulary and notation.

Distance - time graph	Slope
	Steep
Draw	Gradient
Interrupt	Horizontal
Sketch	Vertical
Time	Seconds
Distance	Minutes
Speed	Hours
Average speed	Break
	Returning
Journey	home
Conversion	Between
Plot	Rate of
Straight line	change
Axis	Varies
Linear	Coordinates
Scale	Perpendicular

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?
- Complete, read and interpret information in tables, including timetables.
- Draw a coordinate grid (all four quadrants).
- Describe positions on the full co-ordinate grid.
- Plot coordinates in all four quadrants.
- Present and interpret discrete and continuous data using appropriate graphical methods including bar charts, pictograms, and time graphs.
- Construct and interpret line graphs and use these to solve problems.

How does this content link to future learning?
- Substitute numerical values into formulae and expressions, including scientific formulae, unfamiliar formulae will be given in the question.
- Solve linear equations in one unknown algebraically including those with the unknown on both sides of the equation and ithe use of brackets.

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.