Curriculum Plan Mathematics

Year 10	Knowledge *(Topics covered, NC links)*	Subject Skills	Literacy and Numeracy	School values *(Attitude / Achievement / Community / Endeavour)*	Extra curricular opportunities	Personal development *(Character, SMSC, Fundamental British values, Careers guidance, healthy living, Citizenship, equality and diversity, financial capability, preparation for next stage)*
Cycle 1	Algebraic proportion	Algebraic solution of direct and inverse proportion problems involving squares, cubes etc.	Square, roots. Inverse relationships			Proportion – used in careers that require mathematical analysis and modelling (Science, Finance, Engineering)
	Algebraic fractions	Multiplication and division with algebraic fractions	Link with non algebraic fractions			
	Algebraic proportion	Graphical representation and standard graph shapes	Graphs			Modelling situations graphically
	Circle theorems	Volume of cones, pyramids and spheres The relationship between mass, volume and density	Circle terminology. Writing a mathematical proof.			Volume – Used in practical careers (construction, food technology) as well as other areas of science and technology. Consideration for environmental impact e.g. packaging
	Algebraic fractions	Addition and subtraction with algebraic fractions	Link with non algebraic fractions			
	Circle theorems	Forming and solving equations in the context of the circle theorems	Link geometry to algebra			

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	Indices and surds	Calculation with numbers in surd form. Including rationalising the denominator.	Fractional and negative indices			Representing limitations to problems e.g. financial

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Cycle 2	Coordinate geometry	Finding the equations of straight lines. Applications of y=mx+c to tangents and radii.				Careers involving modelling and analysis (engineering, financial and scientific)
	Scattergraphs	Representation of bivariate data	Interpolation, extrapolation, correlation and causation.			Understanding of real life scenarios including scientific analysis of correlation
	Trigonometry	Application of sine and cosine rules to non-right angled triangles.	Formulae			Trigonometry – Applied in construction, craft, engineering and 3D simulation (physical and graphical).
	Rearranging formulas	Application of factorisation, squares and roots to changing the subject of formulae.	Inverse processes			Formulas used in real life and various careers/industries.

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	Quadratic sequences	Algebraic representation of quadratic sequences				
	Geometric sequences	Combining ratios to solve problems				Modelling real life such as growth and decay e.g. population change, banking
	Inequalities in two variables	2D representation of inequalities				Modelling real world scenarios with limitations. Used in operational analysis/industrial engineering to find improvements in efficiency and profit.
	Quadratic inequalities	Solving quadratic inequalities				

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Cycle 3	Cumulative frequency and box plots	Median, Quartiles, Interquartile range	Reasoning and descriptions using statistics			Statistics (Cumulative frequency, Scattergraphs and Histograms) – All careers that involve

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						management level analysis and decision making.
	Pre-calculus	Finding and interpreting the gradient of non-linear functions. Finding and interpreting the area under non-				Careers involving modelling and analysis (engineering, financial and scientific)
	Velocity time graphs	Interpreting gradient and area in the context of velocity.	Velocity, acceleration, displacement			
	Histograms	Representing data using histograms. Interpreting histograms	Interpret and describe			Roles in data analysis and 'big data' – Analytical skills applied to large datasets created by social media etc.
	Functions	Interpreting function notation. Finding composite and inverse functions	Names of 3D shapes			Construction and architecture
	Combining compound measures	Combining compound measures	Re-arranging formulae			Kinematics – applications in physics and engineering.
	Enlargement and transformations	Negative scale factor enlargement	Function notation			Art and geometry e.g. Islamic Art