Year 11 Higher Curriculum Overview [2022-2023] Subject – Maths sets (BWN/PGL/MJS/OPE)						
	Knowledge & Understanding			**Literacy Skills** **Opportunities for developing literacy skills**	**Employability Skills** **[if any]**	**Assessment Opportunities**
	Composites	**Components** **[includes understanding of KEY concepts & subject specific vocab]**	**Formal Retrieval** **[if any]**			
HT1 **Unit 16b** **Geometry**	**Circle geometry** Week 1	• Find the equation of a tangent to a circle at a given point • Recognise and construct the graph of a circle using $x^2 + y^2 = r^2$ for radius r centred at the origin of coordinates.	• Low stake quizzes • Brain dumps • 5 a day	• Key words – learned and understood • Encourage use of subject language • Questioning • Pupil explanations and reasoning • Engage with worded exam questions		Sam testing
Unit 17 **Algebra**	**Changing subject of formula** **Algebraic fractions, solving equations, rationalising, surds, proofs** Weeks 2, 3 and 4	• Rationalise the denominator involving surds; • Simplify algebraic fractions; • Multiply and divide algebraic fractions; • Solve quadratic equations • Change the subject of a formula, • Solve 'Show that' and proof questions • Use function notation; • Find the inverse of a linear function;			• Scientist • Maths teacher	Sam testing

Unit 18 Vectors	**<u>Vectors</u>** Weeks 5 and 6	• Understand and use vector notation • Understand parallel vectors • Represent vectors, combinations of vectors and scalar multiples in the plane pictorially. • Calculate the sum of two vectors, the difference of two vectors and a scalar multiple of a vector using column vectors • Find the length of a vector using Pythagoras' Theorem. • Calculate the resultant of two vectors. • Solve geometric problems in 2D where vectors are divided in a given ratio. • Produce geometrical proofs to prove points are collinear and vectors/lines are parallel			• Scientist • Space travel • Satellite dishes • Travel industry • Engineering	Sam testing
Unit 19 Graphs	**<u>Reciprocals and gradients</u>** Weeks 7 and 8	• Recognise, sketch and interpret graphs of the reciprocal function • Recognise, sketch and interpret graphs of exponential functions • Set up, solve and interpret the answers in growth and decay problems; • Interpret and analyse transformations of graphs of • Estimate area under a quadratic or other graph by dividing it into trapezia; • Interpret the gradient of linear or non-linear graphs, and estimate the gradient of a quadratic or non-linear graph			• Scientist	Sam testing

		• Interpret the gradient of non-linear graph in curved distance–time and velocity–time graphs: • for a non-linear distance–time graph, estimate the speed at one point in time, from the tangent, and the average speed over several seconds by finding the gradient of the chord; • for a non-linear velocity–time graph, estimate the acceleration at one point in time, from the tangent, and the average acceleration over several seconds by finding the gradient of the chord; • Interpret the gradient of a linear or non-linear graph in financial contexts; • Interpret the area under a linear or non-linear graph in real-life contexts; • Interpret the rate of change of graphs of containers filling and emptying; • Interpret the rate of change of unit price in price graphs.				

HT2 **Unit 19b** **Proportion** **Structured revision with teachers depending on outcomes from mocks.** **Revision of key topics**	**<u>Direct and inverse proportion</u>** Weeks 1 and 2	• Recognise and interpret graphs showing direct and indirect proportion; • Identify direct proportion from a table of values, by comparing ratios of values, for *x* squared and *x* cubed relationships; • Set up and use equations to solve word and other problems involving direct proportion; • Use $y = kx$ to solve direct proportion problems, including questions where students find *k*, and then use *k* to find another value; • Solve problems involving inverse proportion using graphs by plotting and reading values from graphs; • Solve problems involving inverse proportionality; • Set up and use equations to solve word and other problems involving direct proportion or inverse proportion.	• Low stake quizzes • Brain dumps • 5 a day	•	• Hospitality • Construction • Finance	