

Year: 13 Subject: Mathematics - Mechanics



Term	Week	Focus	Summary	Learning Outcomes	Learning skills
Term 1.1	1		Baseline Assessments and orientation	Introduction lessons and baseline assessments.	AutomaticityMeta-cognitionResilience
	2	Functions	Types of functions	Explore composite and inverse, sketching functions. Explore modulus functions and sketching, Transformations of graphs, algebraic simplification and division, partial fractions	 Speed and accuracy Automaticity Flexible thinking
	3	Binomial Expansion	Binomial expansion of non- integer powers	Explore negative and rational powers, related to partial fractions, approximations	 Critical and logical thinking Precision Intellectual playfulness
	4	Trigonometry	Trigonometric functions and formulae	Explore inverse trig functions, cosec, cot, sec,	OriginalityFluent thinkingGeneralisation
	5	Mechanics	Modelling and force diagrams with a slope	Explore F = ma, connected particles, SUVAT	 Abstraction Fluent thinking Generalisation
	6	Trigonometry	Using trigonometric formule to solve equations	Explore addition formulae, double angles	 Strategy planning Connection finding Self regulation



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Term 1.2	1	Trigonometry	Using trigonometric formule to solve equations	Explore Rcos($\theta \pm \alpha$) etc solving equations, max/min values	 Big picture thinking Problem solving Generalisation
	2	Exponential and Log functions	Exponential growth and decay	Explore exponential and natural log function	 Critical and logical thinking Precision Intellectual playfulness
	3	Differentiation	Further differentation techniques	Explore differentiation of all new functions, chain rule, product rule, quotient rule	 Big picture thinking Hard working Self regulation
	4	Mechanics	Moments	Explore moments of a force	 Problem solving Strategy planning Meta-cognition
	5	Differentiation	Further differentation techniques	Explore Implicit differentation and paremtric functions	 Big picture thinking Hard working Self regulation
	6	Mechanics	Centres of mass	Explore Centres of mass in 1 and 2 dimensions	 Problem solving Strategy planning Meta-cognition