5th Applied Mathematics - Year Plan 2020/21

Date	Topic	Content	Learning Outcomes	Prior Knowledge
September	Vectors	Scalar Vectors The sum of Vectors The Plane (i and j) Adjacent and Opposites Writing Vectors Solving Angles	What is a vector, and what does it represent Difference between a Vector and a Scalar Drawing vectors How to add Vectors How to Multiplying a vector by a scalar How to represent Vector on a Cartesian plane How to calculate Magnitude and Direction of a vector	Pythagoras' Theorem The Cartesian Plane Sine, Cosine and Tangent
September	Uniform Acceleration	Uniform acceleration Distance travelled Motion under Gravity	What is uniform acceleration Formulae for uniform acceleration How to draw time-velocity graphs How to use time-velocity graphs How to solve problems where particles travel under gravity	Rearranging formulae Simultaneous equations Quadratic formulae Factorising Sine double angle
October	Projectiles	What is a projectile? Target Practice	How to calculate the position of a projectile at any time How to calculate the velocity of a projectile at any time How to find the greatest height reached How to find the range of a projectile	Secant squared of an angle
November	Newtons law and connected particles	Newtons law of motion Tension Intro to force The laws of friction System of connected particles	Definitions of force, mass and momentum Newton's laws of motion About forces such as weight, tension, normal reaction, friction How to use f=ma	Simultaneous equations with more than 2 variables
	Christmas Exam			
December	Relative Velocity	The meaning of relative Velocity Relative displacement The shortest distance Particles at awkward angles Rivers, currents and winds t-method	How to find velocity of one particle relative to another How to determine if two particles are on collision course How to find the shortest distance between two particles How to find time with particles at a given range How to deals with questions involving rivers, wind and curren How to use the t-method	Magnitude Direction of a vector Quadratic, simultaneous eqn. Basic Trigonometry Sine and cosine rule
March	Projectiles on an	The inclined plane	How to deal with inclined planes	Advanced Trigonometry

	inclined plane	Range and Maximum height Landing angles Projectiles which bounce	Range and maximum range on the inclined plane How to deal with the landing angle How to solve questions involving a bounce	Compound Angles such as: sin(A+B) and cos(A+B) Coefficient of Restitution
April/May	Work, Power, Energy and Momentum	Work and power Energy Conservation of energy Principles of conservation of momentum and strings	Definition of work and power How to use P=Tv Definition of potential energy and kinetic energy Principles of conservation of energy and its applications Principles of conservation of momentum and its applications	Formulae for uniform acceleration Basic Trigonometry Problems with pulleys
	Summer Exam			