Spring Term plan

Year 12 Further Mathematics A Level

Mr Bullock	Mr Ahluwalia
Matrices Solve linear simultaneous equations in three variables by use of the inverse matrix Interpret geometrically the solution and failure of solution of simultaneous linear equations. **Further Integration** Understand and evaluate the mean value of a function. Derive formulae for and calculate volumes of revolution **Further Vectors** Understand and use the vector and Cartesian forms of an equation of a straight line in 3D. Understand and use the vector and Cartesian forms of the equation of a plane. Check whether vectors are perpendicular by using the scalar product Find the intersection of two lines. Calculate the perpendicular distance a point to a line.	**Work, energy and power** Solve problems involving work done by a force acting in the direction of motion or directly opposing the motion. Use gravitational potential and kinetic energy in conservation of energy problems. Investigate Hooke's Law including using modulus of elasticity. Solve problems involving work done by a variable force. Solve problems involving elastic potential energy using modulus of elasticity and apply in conservation of energy problems.
Half Term	
Discrete random variables Understand DRVs with distributions given in the form of a table or function. Evaluate probabilities for a DRV. Evaluate measures of average and spread for a DRV to include mean, variance, standard deviation, mode and median. Find the mean, variance and standard deviation for functions of a DRV Know the discrete uniform distribution defined on the set 1,2, …, n . Understand when this distribution can be used as a model. **The Poisson distribution** Understand conditions for a Poisson distribution to model a situation. Know the Poisson formula and calculate Poisson probabilities using the formula or equivalent calculator function. Know mean, variance and standard deviation of a Poisson distribution. Use the result that in a Poisson distribution the mean and variance of X are equal. Understand the distribution of the sum of independent Poisson distributions.	**Momentum and collisions** Solve problems involving conservation of momentum for linear motion and cases where velocities are given as one or two dimensional vectors Look at the coefficient of restitution and Newton's Experimental Law. Use in direct collisions and impacts with a fixed smooth surface. Understand impulse and its relation to momentum. Study impulse for variable forces in 1D