



	AUTUMN								SPRING							SUMMER					
	1	2	3	4	5	6	7	8	16	17	18	19	20	21	27	28	29	30	31	32	
Year 12 Teacher A	Topic – Kinematics S - Understand and use the language of kinematics. P - Understand, use and interpret graphs in kinematics for motion in a straight line P - Understand, use and derive the formulae for constant acceleration for motion in a straight line				Topic – Trigonometry P - Understand and use the definitions of sine, cosine, and tangent, the sine and cosine rules, the area of a triangle P - Understand and use their graphs, symmetries, and periodicity P - Solve simple trigonometric equations				Topic – Forces SK - Understand and use Newton's third law; including problems involving smooth pulleys and connected particles.		Topic – Differentiation P - Understand and use the derivative as the gradient of a curve, interpretation as a rate of change; sketching the gradient function for a given curve; second derivatives; differentiation from first principles for small positive integer powers of x				Topic – Variable acceleration P - Use calculus in kinematics for motion in a straight line:		Revision and Y12 Exam				
Year 12 Teacher B	Topic – Surds and Indices S/P - Understand and use the laws of indices P - Use and manipulate surds, rationalising the denominator		Topic – Quadratics P - quadratic functions and their graphs, the discriminant of a quadratic function, including the conditions for real and repeated roots.		Topic – Equations and Inequalities P - simultaneous equations Solve linear and quadratic inequalities		Topic – Polynomials P - Manipulate polynomials algebraically P- Use of the factor theorem		Topic – Probability S- Understand and use mutually exclusive and independent events when calculating probabilities Sk- Link to discrete and continuous distributions		Topic – the binomial expansion and distribution P- Understand and use the binomial expansion including associated notation P- Understand and use the binomial distribution, as a model; calculate probabilities using the binomial distribution Sk- Conduct a statistical hypothesis test using the binomial distribution and		Topic – Exponentials and logarithms continued.		Revision and Y12 Exam						

										interpret the results in context									
	9	10	11	12	13	14	15	22	23	24	25	26	33	34	35	36	37	38	39
Year 12 Teacher A	Topic – Graphs and Transformations P- Understand and use graphs of functions, sketch curves. Simple transformations on graphs, including sketching graphs:		Topic – Vectors S - Calculate the magnitude and direction of a vector P - Use vectors to solve problems in pure mathematics and in context, including forces		Topic – Forces P - understand and use Newton’s first law P - Understand and use Newton’s second law for motion in a straight line Sk - Understand and use weight and motion in a straight line under gravity			Topic – Differentiation P - Understand and use the second derivative as the rate of change of gradient P - Identify where functions are increasing or decreasing		Topic – Integration S - Know and use the Fundamental Theorem of Calculus S - Integrate functions and related sums, differences, and constant multiples P - Evaluate definite integrals; use a definite integral to find the area under a curve			Topic – Differentiation S- Understand and use the second derivative in connection to convex and concave sections of curves and points of inflection P- Apply differentiation to find points of inflection P- Differentiate using the product rule, the quotient rule and the chain rule, including problems involving connected rates of change and inverse functions						
Year 12 Teacher B	Topic – Coordinate geometry P - Understand and use the equation of a straight line, P - The coordinate geometry of the circle S - the angle in a semicircle is a right angle S - the perpendicular from the centre to a chord bisects the chord S - the radius of a circle at a given point on its circumference is perpendicular to the tangent				Topic – Collecting and interpreting data P- Interpret measures of central tendency and variation, extending to standard deviation P- Be able to calculate standard deviation, SK- Recognise and interpret possible outliers			Topic – Finish binomial distribution	Topic – Exponentials and logarithms P- Understand and use the laws of logarithms Sk – Solve exponential equations P- Use logarithmic graphs to estimate parameters in relationships given data for x and y Sk- Understand and use exponential growth and decay; use in modelling			Topic – Sequences and Series S - Understand and use sigma notation for sums of series S/P - Understand and work with arithmetic sequences and series, including the formulae for nth term and the sum to n terms S/P - Understand and work with geometric sequences and series including the formulae for the nth term and the sum of a finite geometric series; the							

					sum to infinity of a convergent geometric series
	Assessment- Y12 half term tests throughout year				

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Year 13 Teacher A	Topic – Functions S/P - the modulus function S/P - composite functions; inverse functions and their graphs SK - combinations of transformations Sk - Use of functions in modelling,			Topic – Further differentiation S - the derivative of sin x and cos x P - the second derivative P - Differentiate exponentials and logarithms and implicitly			Topic – Vectors P - Use vectors in two dimensions and in three dimensions		Topic – Integration Contd.		Topic – Force and motion P - Understand and use Newton's second law for motion in a straight line; extended to situations where forces need to be resolved. P - Understand and use addition of forces; resultant forces; dynamics for motion in a plane.			Topic –Friction S - the model for friction, coefficient of friction	Revision and A-level Exam					

Year 13 Teacher B	Topic – Trigonometry		Topic – Trigonometric functions and identities					Topic – Probability and distributions		Topic – Parametric equations		Topic – Proof		Revision and A-level Exam					
	S - Work with radian measure, arc length, area of sector P - Understand and use the standard small angle approximations		S - The definitions of secant, cosecant and cotangent and of arcsin, arccos and arctan P - Understand and use compound and double angle formulae, use expressions in the equivalent forms Sk - Construct proofs involving trigonometric functions and identities					(contd.)		S/P - Parametric equations, conversion between Cartesian and parametric forms Sk - Use parametric equations in modelling P - Differentiate simple functions for first derivative only		Sk - Proof by contradiction (including proof of the irrationality of $\sqrt{2}$ and the infinity of primes, and application to unfamiliar proofs)							
	9	10	11	12	13	14	15	22	23	24	25	26	33	34	35	36	37	38	39
Year 13 Teacher A	Topic – Kinematics		Topic – Projectiles		Topic – Integration			Topic – Friction (contd.)		Topic – Differential equations		Topic – Moments							
	P - Understand, use and derive the formulae for constant acceleration for motion in a straight-line using vectors in 2d		Sk - Model motion under gravity in a vertical plane P - Use trigonometric functions to solve problems in context		P - Use a definite integral to find the area between two curves P - Integration by substitution P - Integration by parts. SK - Integrate using partial fractions that are linear in the denominator					P - Evaluate the analytical solution of simple first order differential equations with separable variables, including finding particular solutions		S/P - Understand and use Moments in simple static contexts							

					Sk - Interpret the solution of a differential equation in context		
Year 13 Teacher B	Topic – Algebra Sk - Simplify rational expressions P - Decompose rational functions into partial fractions S/P - Extend the binomial expansion to any rational n, including its use for approximation	Topic – Probability and distributions S - Understand and use the conditional probability formula P - Understand and use the Normal distribution to find probabilities Sk - Select an appropriate probability distribution for a context, with appropriate reasoning, including recognising when the binomial or Normal model may not be appropriate	Topic – Hypothesis testing S/P - Extend AS content to correlation coefficients interpret a given correlation coefficient using a given p-value or critical value (calculation of correlation coefficients is excluded) P - Conduct a statistical hypothesis test for the mean of a normal distribution	Topic – Numerical methods P - Locate roots by considering changes of sign P - Solve equations approximately using simple iterative methods; be able to draw associated cobweb and staircase diagrams S - Solve equations using the Newton-Raphson method S - Numerical integration of functions: the trapezium rule			
	Assessment- Y13 January Mock exams				Assessment- Y13 March Mock exams		