

KS5 Curriculum Map 2017/2018

KS5	Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
Year 12 Topics						
	<p>Pure 1 - Chapter 1 - Algebraic Expressions</p> <ul style="list-style-type: none"> Collecting Like Terms Indices Expanding an Expression Factorising Expressions Factorising Quadratic Expressions Negative & Fractional Indices Surds Rationalising the Denominator <p>Pure 1 - Chapter 2 – Quadratics</p> <ul style="list-style-type: none"> Solving Quadratics by Factorisation Completing the Square The Discriminant Quadratic Formula Sketching Quadratic Functions Using Function Notation Modelling with Quadratics <p>Pure 1 – Chapter 3 – Equations & Inequalities</p> <ul style="list-style-type: none"> Linear Simultaneous Equations Quadratic Simultaneous Equations Simultaneous Equations on Graphs Solving Linear Inequalities Solving Quadratic Inequalities Inequalities on Graphs Regions on Graphs 	<p>Pure 1 – Chapter 5 – Straight Line Graphs</p> <ul style="list-style-type: none"> Equation of a straight line in $y = mx + c$ or $ax + by + c = 0$ Equation of a straight line using $y - y_1 = m(x - x_1)$ Conditions for two straight lines to be parallel & perpendicular Equations of parallel & perpendicular lines Length & Area Modelling with Straight Lines <p>Pure 1 – Chapter 6 – Circles</p> <ul style="list-style-type: none"> Midpoints & Perpendicular Bisectors Equation of a Circle Intersections of Straight Lines & Circles Using Tangents & Chords Using Triangles within Circles <p>Pure 1 – Chapter 7 – Algebraic Methods</p> <ul style="list-style-type: none"> Working with Algebraic Fractions Dividing Polynomials Using the Factor Theorem Mathematical Proof Methods of Proof 	<p>Pure 1 – Chapter 9 – Trigonometric Ratios</p> <ul style="list-style-type: none"> Using the Sine Rule to find Missing Sides Using the Sine Rule to find Unknown Angles Using the Cosine Rule to find an Unknown Side Using the Cosine Rule to find a Missing Angle Area of a Triangle Using Sine Using the Sine & Cosine Rule with Pythagoras' Theorem to Problem Solve Sine, Cosine & Tangent Graphs Transforming Trigonometric Graphs <p>Pure 1 – Chapter 10 – Trigonometric Identities & Equations</p> <ul style="list-style-type: none"> The values of trigonometric functions in the four quadrants Exact values and surds for trigonometric functions Simple Trigonometric Identities Harder Trigonometric Identities Equations & Identities 	<p>Pure 1 – Chapter 12 – Differentiation</p> <ul style="list-style-type: none"> Gradients of Curves Finding the Derivative Differentiating x^n Differentiating Quadratics Differentiating Functions with 2+ Terms Gradients, Tangents & Normals Increasing & Decreasing Functions Second Order Derivatives Stationary Points Sketching Gradient Functions Modelling with Differentiation <p>Pure 1 – Chapter 13 – Integration</p> <ul style="list-style-type: none"> Integrating x^n Indefinite Integrals Definite Integrals Finding Functions Areas Under Curves Areas Under the X-Axis Areas Between Curves & Lines 	<p>Pure 2 – Chapter 1 – Algebraic Methods</p> <ul style="list-style-type: none"> Proof by Contradiction Algebraic Fractions Partial Fractions Repeated Factors Algebraic Division <p>Pure 2 – Chapter 2 – Functions & Graphs</p> <ul style="list-style-type: none"> Modulus Function Functions & Mappings Composite Functions Inverse Functions $y = f(x)$ & $y = f(x)$ Combining Transformations Solving Modulus Problems <p>Stats 2 – Chapter 1 – Regression, Correlation & Hypothesis Testing</p> <ul style="list-style-type: none"> Exponential Models Measuring Correlation Hypothesis Testing for Zero Correlation <p>Stats 2 – Chapter 2 – Conditional Probability</p> <ul style="list-style-type: none"> Set Notation Conditional Probability Conditional Probabilities in Venn Diagrams Probability Formulae Tree Diagrams 	<p>Pure 2 – Chapter 3 – Sequences & Series</p> <ul style="list-style-type: none"> Arithmetic Sequences Arithmetic Series Geometric Sequences Geometric Series Sum to Infinity Sigma Notation Recurrence Relations Modelling with Series <p>Pure 2 – Chapter 5 – Radians</p> <ul style="list-style-type: none"> Radian Measure Arc Length Areas of Sectors & Segments Solving Trigonometric Equations Small Angle Approximations <p>Stats 2 – Chapter 3 – Normal Distributions</p> <ul style="list-style-type: none"> The Normal Distribution Finding Probabilities for Normal Distribution Inverse Normal Distribution Function Standard Normal Distribution Finding μ and σ Approximating Binomial Distribution Hypothesis Testing with Normal Distribution

	<p>Pure 1 – Graphs & Transformations</p> <ul style="list-style-type: none"> • Cubic Functions • Reciprocal Functions • Quartic Graphs • Solving Equations using the Intersection • Transformations $f(x + a)$, $f(x - a)$ and $f(x) + a$ • Transformations $f(ax)$ and $af(x)$ • Transforming Functions <p>Stats 1 – Chapter 1 - Data Collection</p> <ul style="list-style-type: none"> • Populations & Samples • Sampling • Non-Random Sampling • Types of Data • Large Data Set <p>Stats 1 – Chapter 2 – Measures of Location & Spread</p> <ul style="list-style-type: none"> • Measures of Central Tendency • Other Measures of Location • Measures of Spread • Variance & Standard Deviation • Coding 	<p>Pure 1 – Chapter 8 – The Binomial Expansion</p> <ul style="list-style-type: none"> • Pascal’s Triangle • Combinations and Factorial Notation • Using the Binomial Expansion • Expanding $(a + bx)^n$ using the Binomial Expansion • Solving Binomial Problems • Solving using Binomial Estimation <p>Stats 1 – Chapter 3 – Representations of Data</p> <ul style="list-style-type: none"> • Outliers • Box plots • Cumulative Frequency • Histogram • Comparing Data Sets 	<p>Pure 1 – Chapter 11 – Vectors</p> <ul style="list-style-type: none"> • Vectors • Representing Vectors • Magnitude & Direction • Position Vectors • Solving Geometric Problems • Modelling With Vectors <p>Stats 1 – Chapter 4 – Correlation</p> <ul style="list-style-type: none"> • Correlation • Linear Regression <p>Stats 1 – Chapter 5 – Probability</p> <ul style="list-style-type: none"> • Calculating Probabilities • Venn Diagrams • Mutually Exclusive & Independent Events • Tree Diagrams 	<p>Pure 1 – Chapter 14 – Exponentials & Logarithms</p> <ul style="list-style-type: none"> • Exponential Functions • $y = ex$ • Exponential Modelling • Logarithms • Laws of Logarithms • Solving Equations using Logarithms • Working with Natural Logarithms • Logarithms & Non-Linear Data <p>Stats 1 – Chapter 6 – Statistical Distributions</p> <ul style="list-style-type: none"> • Probability Distributions • The Binomial Distribution • Cumulative Probabilities <p>Stats 1 – Chapter 7 – Hypothesis Testing</p> <ul style="list-style-type: none"> • Hypothesis Testing • Finding Critical Values • One- Tailed Tests • Two-Tailed Tests 		
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Year 13 Topics

<p>Core & Mechanics</p>	<p>Topic: e & ln</p> <p>Overall aims: Use and solve with e and ln</p> <p>Exam specification specific areas/skills: Draw graphs of e and ln, solve equations with e and ln</p> <p>Topic: Review Functions</p> <p>Overall aims: Review previously taught topic</p> <p>Exam specification specific areas/skills: Use function notation, find inverse functions, graph functions, use range and domain</p> <p>Topic: Numerical Methods</p> <p>Overall aims: Find roots of equations</p> <p>Exam specification specific areas/skills: Show where roots lie, use iteration to find roots to dp</p> <p>Topic: Transformations</p> <p>Overall aims: Sketch graphs with modulus and transformations</p> <p>Exam specification specific areas/skills: Sketch graphs with have modulus, apply a combination of transformation</p>	<p>Topic: Trig</p> <p>Overall aims:</p> <p>Exam specification specific areas/skills:</p> <p>Topic: Further Trig</p> <p>Overall aims: Use trig formulae and solve problems using identities</p> <p>Exam specification specific areas/skills: Use addition and double rule formulae, solve trig problems, know the factor theorem</p> <p>Topic: Differentiation</p> <p>Overall aims: Know the rules of harder differentiation to differentiate functions</p> <p>Exam specification specific areas/skills: Use chain, product and quotient rule, different sin, cos, tan and log functions</p> <p>Topic: Statics</p> <p>Overall aims: Find unknown forces acting on a particle</p> <p>Exam specification specific areas/skills: Understand how weight, tension, rough surfaces, friction and magnitude of forces can affect the movement of particles</p>	<p>Topic: Partial Fractions</p> <p>Overall aims: To work with and solve different types of partial fractions</p> <p>Exam specification specific areas/skills: Partial fractions with two or more linear factors in the denominator, improper fractions to partial fractions</p> <p>Topic: Coordinate Geometry</p> <p>Overall aims: To work between parametric equations and Cartesian form</p> <p>Exam specification specific areas/skills: Use parametric equations to find coordinates, covert to Cartesian, and find area under a curve</p> <p>Topic: Binomial</p> <p>Overall aims: Expand $(ax + b)^n$</p> <p>Exam specification specific areas/skills: To use the binomial expansion for any constants a, b and n. Use partial fractions with binomial expansion</p>	<p>Topic: Vectors</p> <p>Overall aims: Apply and use vector knowledge in different dimensions and straight lines</p> <p>Exam specification specific areas/skills: Draw diagrams, complete vector arithmetic, understand Cartesian components of vectors, use vectors with straight lines</p> <p>Topic: Integration</p> <p>Overall aims: Integrate a variety of functions in various ways</p> <p>Exam specification specific areas/skills: Integrate standard functions, trig identities, partial fractions, standard patterns, using reverse chain rule, substitution, by parts, numerical integration.</p>	<p>Topic: Revision</p> <p>Overall aims: Recap all the topics</p> <p>Exam specification specific areas/skills: Exam question practise</p>	<p>Topic: Revision until exams on 20/06 & 23/06</p> <p>Overall aims: Recap all the topics</p> <p>Exam specification specific areas/skills: Exam question practise</p>
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	<p>Topic: Review Mathematical Models</p> <p>Overall aims: Understand terminology</p> <p>Exam specification specific areas/skills: To understand the terminology used within this unit</p> <p>Topic: Review Kinematics</p> <p>Overall aims: To know the SUVAT equations and apply them</p> <p>Exam specification specific areas/skills: Learn the 5 SUVAT equations, understand distance time and speed time graphs</p> <p>Topic: Dynamics</p> <p>Overall aims: Understand, force, friction, velocity and acceleration</p> <p>Exam specification specific areas/skills: Solve problems with forces acting on a particle, use the constant for friction, consider collisions</p>	<p>Topic: Vectors</p> <p>Overall aims: Understand what a vector is and how it acts on a particle</p> <p>Exam specification specific areas/skills: Use vectors to describe forces, use displacement, velocity and acceleration to give a particle as a vector</p>	<p>Topic: Differentiation</p> <p>Overall aims: Differentiate functions and relations</p> <p>Exam specification specific areas/skills: Differentiate parametric functions, implicit relations, powers, rates of change and work with differential equations</p> <p>Topic: Moments</p> <p>Overall aims: Solve problems involving bodies</p> <p>Exam specification specific areas/skills: Calculate the magnitude of a force on a body, solve problems with bodies in equilibrium and non-uniform bodies</p>			
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