

**A level Mathematics Year 12 Work List**  
**Teacher B**

**Algebraic expressions - Chapter 1 Pure Year 1 book**

1) Index Laws	
2) Negative and fractional Indices	
3) Surds	
4) Rationalising the denominator	

**Data Collection - Chapter 1 Stats/Mech Year 1 book**

1) Populations and samples Ex 1A	
2) Sampling Ex 1B	
3) Non random sampling Ex 1C	
4) Types of data Ex 1D	
5) The large data set Ex 1E	
<b>Large data set A3 worksheet to complete</b>	

**Measures of Location and spread - Chapter 2 Stats/Mech Year 1 book**

1) Measures of central tendency Ex 2A and Ex 2B	
2) Other measures of location Ex 2C	
3) Measures of spread Ex 2D	
4) Variance and standard deviation Ex 2E	
5) Coding Ex 2F	

**Representations of data - Chapter 3 Stats/Mech Year 1 book**

1) Outliers Ex 3A	
2) Box Plots Ex 3B	
3) Cumulative frequency Ex 3C	
4) Histograms Ex 3D	
5) Comparing Data Ex 3E	

**Graphs and transformations - Chapter 4 Pure Year 1 book**

1) Sketching cubic graphs Ex 4A	
2) Sketching quartic graphs Ex 4B	
3) Reciprocal Graphs Ex 4C	
4) Points of intersection Ex 4D	
5) Translating graphs Ex 4E	
6) Stretching graphs Ex 4F	
7) Transforming graphs Ex 4G	

**Straight Line Graphs - Chapter 5 Pure Year 1 book**

1) $y=mx+c$ Ex 5A and Ex 5B	
2) Equations of lines Ex 5C	
3) Equations of lines 2 Ex 5D	
4) Parallel and perpendicular lines Ex 5E and Ex 5F	
5) Length and area Ex 5G	
6) Modelling with straight lines Ex 5H	

**Circles - Chapter 6 Pure Year 1 book**

1) Midpoints and perpendicular bisectors Ex 6A	
2) perpendicular bisector Ex 6B	
3) Equation of a circles Ex 6C	
4) Intersections of a straight line and circle Ex 6D	
5) Use tangent and chord properties Ex 6E	
6) Circles and tangents Ex 6F	

**The Binomial Expansion - Chapter 8 Pure Year 1 book**

1) Pascal's triangle Ex 8A	
2) Factorial notation Ex 8B	
3) The binomial expansion Ex 8C	
4) Solving binomial problems Ex 8D	
5) Binomial Estimation Ex 8E	

**Probability - Chapter 5 Stats/Mech Year 1 Book**

1) Calculating probabilities Ex 5A	
2) Venn diagrams Ex 5B	
3) Mutually exclusive and independent events Ex 5C	
4) Tree diagrams Ex 5D	

**Statistical distributions - Chapter 6 Stats/Mech Year 1 book**

1) Discrete probability distributions Ex 6A	
2) The binomial distribution Ex 6B	
3) Cumulative probabilities Ex 6C	

**Hypothesis Testing - Chapter 7 Stats/Mech Year 1 book**

1) Hypothesis testing Ex 7A	
2) Finding critical values Ex 7B	
3) One tailed tests Ex 7C	
4) Two tailed tests Ex 7D	

**Exponentials and logarithms - Chapter 14 Pure Year 1 book**

1) Exponential functions Ex 14A	
2) $y=e^{ax}$ Ex 14B	
3) Exponential modelling EX 14C	
4) Logarithms Ex 14D	
5) Laws of logarithms Ex 14E	
6) Solving solving equations with logarithms Ex 14F	
7) Natural Logarithms Ex 14G	
8) Logarithms and non-linear data Ex14H	

**Teacher A**

**Quadratics - Chapter 2 Pure Year 1 book**

1) Solving quadratic equations Ex 2A and Ex 2B	
2) Completing the square Ex 2C and Ex 2D	
3) Functions Ex 2E	
4) Quadratic graphs Ex 2F	
5) The discriminant Ex 2G	
6) Modelling with quadratics Ex 2H	

**Equations and Inequalities - Chapter 3 Pure Year 1 book**

1) Linear simultaneous equations Ex 3A	
2) Quadratic simultaneous equations Ex 3B	
3) Simultaneous equations on graphs Ex 3C	
4) Linear inequalities Ex 3D	
5) Quadratic inequalities Ex 3E	
6) In equalities on graphs Ex 3F	
7) Regions Ex 3G	

**Algebraic Methods - Chapter 7 Pure Year 1 book**

1) Algebraic fractions Ex 7A	
2) Dividing polynomials Ex 7B	
3) The factor theorem Ex 7C	
4) Mathematical proof Ex 7D	
5) Methods of proof Ex 7E	

**Vectors - Chapter 11 Pure Year 1 book**

1) Vectors Ex 11A	
2) Representing vectors Ex 11B	
3) Magnitude and direction Ex 11C	
4) Postion vectors Ex 11D	
5) Solving geometric problems Ex 11E	
6) Modelling wth vectors Ex 11F	

**Modelling in mechanics - Chapter 8 Stats/Mech Year 1 book**

1) Constructing a model Ex 8A	
2) Modelling assumptions Ex 8B	
3) Quantities and units Ex 8C	
4) Working with vectors Ex 8D	

**Constant acceleration- Chapter 9 Stats/Mech Year 1 book**

1) displacement-time graphs Ex 9A	
2) Velocity -time graphs Ex 9B	
3) Constant acceleration formulae 1 Ex 9C	
4) Consant acceleration formulae 2 Ex 9D	
5) Vertical motion under gravity Ex 9E	

**Forces and motion - Chapter 10 Stats/Mech Year 1 book**

1) Force diagrams Ex 10A	
2) Forces and vectors Ex 10B	
3) Forces and acceleration Ex 10C	
4) Motion in 2 dimensions Ex 10D	
5) Connected particles Ex 10E	
6) Pulleys Ex 10F	

**Differentiation - Chapter 12 Pure Year 1 book**

1) Gradients of curves by first principles Ex 12A	
2) Finding derivatives Ex 12B	
3) Differentiating Ex 12C	
4) Differentiating quadratic Ex 12D	
5) Differentiating functions with two or more terms Ex 12E	
6) Gradients, tangents and normals Ex 12F	
7) Increasing and decreasing functions Ex 12G	
8) Second order derivatives Ex 12H	
9) Stationary points Ex 12I	
10) Sketching gradient functions Ex 12J	
11) Modelling with differentiation Ex 12K	

**Integration - Chapter 13 Pure Year 1 book**

1) Integrating $x^n$ Ex 13A	
2) Indefinite integrals Ex 13B	
3) Finding functions Ex 13C	
4) Definite integrals Ex 13D	
5) Area under curves Ex 13E	
6) Areas under the x axis Ex 13F	
7) Areas between curves and lines Ex 13G	

**Variable acceleration Chapter 11 -Stats/mech Year 1 book -5 normal lessons**

1) Function of time Ex11A	
2) Using differentiation Ex 11b	
3) Maxima and minima problems Ex 11C	
4) Using integration Ex 11D	
5) Constant acceleration formulae Ex 11E	

**Assesments:**  
**September - baseline test**  
**January**  
**April - progress tests**

**Year 13 A level Mathematics Work List**  
**Teacher B**

**Radians -Chapter 5 Year 2 book**

1) Radian measure Ex 5A and Ex 5B	
2) Arc Length Ex 5C	
3) Areas of sectors and segments Ex 5D	
4) Solving trig equations Ex 5E	
5) Small Angle approximations Ex 5F	

**Trigonometric Functions - Chapter 6 Year 2 book**

1) Secant, cosecant and cotangent and their graphs Ex 6A and Ex 6B	
2) Using sec x, cosec x and cot x Ex 6C	
3) Trigonometric identities Ex 6D	
4) Inverse trigonometric functions Ex 6E	

**Trigonometry and modelling - Chapter 7 Year 2 book**

1) Addition formulae Ex 7A	
2) Using the angle addition formulae Ex 7B	
3) Double angle formulae Ex 7C	
4) Solving trigonometric equations Ex 7D	
5) Simplifying a $\cos x \pm \sin x$ Ex 7E	
6) Proving trigonometric identities Ex 7F	
7) Modelling with trigonometric functions Ex 7G	

**Numerical Methods - Chapter 10 Year 2 book**

1) Locating roots Ex 10A	
2) Iteration Ex 10 B	
3) The Newton-Raphson method Ex 10C	
4) Applications to modelling Ex 10D	

**Numerical methods Integration - Chapter 11 Year 2 book**

1) Trapezium rule Ex 11I	
--------------------------	--

**Vectors - Chapter 12 Year 2 book**

1) 3D coordinates Ex 12A	
2) Vectors in 3D Ex 12B	
3) Solving geometric problems Ex 12C	
4) Applications to mechanics Ex 12D	

**Correlation - Chapter 4 Stats/Mech Year 1 book**

1) Correlation Ex 4A	
2) Linear Regressions Ex 4B	

**Regression, correlation and hypothesis testing - Chapter 1 Stats/Mech Year 2 book**

1) Exponential models Ex 1A	
2) Measuring correlation PMCC Ex 1B	
3) Hypothesis testing for zero correlation Ex 1C	

**Conditional Probability - Chapter 2 Stats/Mech Year 2 Book**

1) Set notation Ex 2A	
2) Conditional probability Ex 2B	
3) Conditional probability in Venn diagrams Ex 2C	
4) Probability formulae Ex 2D	
5) Tree diagrams Ex 2E	

**The Normal Distribution - Chapter 3 Stats/Mech Year 2 book**

1) The normal distribution Ex 3A	
2) Finding probabilities for normal distributions Ex 3B	
3) The inverse normal distribution function Ex 3C	
4) The standard normal distribution Ex 3D	
5) Finding mean and standard deviation Ex 3E	
6) Approximating binomial distribution Ex 3F	
7) Hypothesis testing with the normal distribution Ex 3G	

**Teacher A**

**Differentiation -Chapter 12 Year 1 book**

1) Sketching gradient functions Ex 12J Starter?	
2) Modelling with differentiation Ex 12K	

**Differentiation - Chapter 9 Year 2 book**

1) Differentiating sin x and cos x Ex 9A	
2) Differentiating exponentials and logarithms Ex 9B	
3) The chain rule Ex 9C	
4) The product rule Ex 9D	
5) The quotient rule Ex 9E	
6) Differentiating trigonometric functions Ex 9F	

**Parametric Equations -Chapter 8 Year 2 book**

1) Parametric equations Ex 8A	
2) Using trigonometric identities Ex 8B	
3) Curve sketching Ex 8C	
4) Points of intersection Ex 8D	
5) Modelling with parametric equations Ex 8E	
6) Parametric differentiation Ex 9G Chapter 9	

**Integration - Chapter 11 Year 2 book**

1) Integrating standard functions Ex 11A	
2) Integrating $f(ax+b)$ Ex 11B	
3) Using trig identities Ex 11C	
4) Reverse chain rule Ex 11D	
5) Integration by substitution Ex 11E	
6) Integration by parts Ex 11F	
7) Partial fractions Ex 11G	
8) Finding areas Ex 11H	

**Moments - Chapter 4 Stats/Mech Year 2 book**

1) Moments Ex 4A	
2) Resultant moments Ex 4B	
3) Equilibrium Ex 4C	
4) Centres of Mass Ex 4D	
5) Tilting Ex 4E	

**Forces and Friction - Chapter 5 Stats/Mech Year 2 book**

1) Resolving forces Ex 5A	
2) Inclined planes Ex 5B	
3) Friction Ex 5C	

**Projectiles - Chapter 6 Stats/Mech Year 2 book**

1) Horizontal projection Ex 6A	
2) Horizontal and vertical components Ex 6B	
3) Projection at any angle Ex 6C	
4) Projectile motion formulae Ex 6D	

**Applications of forces - Chapter 7 Stats/Mech Year 2 book**

1) Static particles Ex 7A	
2) Modelling with statics Ex 7B	
3) Friction on static particles Ex 7C	
4) Static rigid bodies Ex 7D	
5) Dynamic and inclined planes Ex 7E	
6) Connected particles Ex 7F	

**Further Kinematics - Chapter 8 Stats/Mech Year 2 book**

1) Vectors in kinematics Ex 8A	
2) Vector methods with projectiles Ex 8B	
3) Variable acceleration in one dimension Ex 8C	
4) Differentiating vectors Ex 8D	
5) Integrating vectors Ex 8E	

**Assessments:**  
**January - exam week**