| A Level Pure Topics   | A Level<br>Year 1   | A Level<br>Year 2 | GCSE Further Maths<br>(AQA/Edexcel)<br>or<br>GCSE Additional Maths<br>(OCR/Cambridge) |
|---|---------------------|-------------------|---|
| Algebra   |                     |                   |   |
| Expanding brackets and simplifying expressions  |                     |                   | All   |
| Factorising (4 main types – common , difference of 2 squares, product sum and AC method)  |                     |                   | All   |
| Simultaneous Equations (linear and quadratic)  Completing The Square  |                     |                   | All<br>All  |
| Solving and Forming Quadratics  |                     |                   | All   |
| Surds   |                     |                   | All   |
| Linear and Quadratic Modelling  |                     |                   | All   |
| Solving Inequalities (linear and quadratic)   |                     |                   | All   |
| Solving Inequalities (rational) Indices   |                     |                   | All<br>All  |
| Algebraic Fractions   |                     |                   | All   |
| Discriminant (including hidden discriminant)  |                     |                   | All   |
| Binomial Expansion (integers powers)  |                     |                   | All   |
| Binomial Expansion (fractional and negative powers)   |                     |                   | ΔΠ  |
| Polynomial Division Factor theorem  |                     |                   | All<br>All  |
| Remainder Theorem   |                     |                   | Edexcel and Cambridge   |
| Partial Fractions   |                     |                   |   |
| Geometry  |                     |                   |   |
| Volume and surface area of 3D shapes (assumed knowledge)  |                     |                   | All   |
| Straight Line Graphs (including parallel and perpendicular lines)   |                     |                   | All   |
| Tangent to a circle   |                     |                   | All   |
| Circles (equation of a circle)  |                     |                   | AQA, OCR and Cambridge  |
| Trigonometry  |                     |                   |   |
| Bearings  |                     |                   | All   |
| Radians   |                     |                   | Edexcel and Cambridge   |
| Arc Lengths And Areas Of Sectors  |                     |                   | Edexcel and Cambridge   |
| Given The Value Of One Trig Function, Find Another  |                     |                   | All   |
| Sine/Cosine Rule  |                     |                   | All<br>All  |
| identities and solving with $x + \cos x - 1$ and $\tan x - \frac{\cos x}{\cos x}$   |                     |                   |   |
| Pythagoras, SOHCAHTOA and 3D trig (assumed knowledge)  Trig graphs (sin, cos and tan)   |                     |                   | All<br>All  |
| Identities and solving with $1 + \tan^2 x = \sec^2 x$ and $1 + \cot^2 x = \csc^2 x$   |                     |                   | Cambridge   |
| Identities and solving with reciprocal functions: $\sec x = \frac{1}{\cos x}$ , $\csc x = \frac{1}{\sec x}$ . $\cot x = \frac{1}{\tan x}$ |                     |                   | Cambridge   |
| Identities and solving with double angle formulae   |                     |                   | 22 2 20   |
| Identities and solving with addition angle formulae   |                     |                   | Edexcel   |
| Identities and solving with $asinx \pm bcos x$ or $acos x \pm bsin x$ forms   |                     |                   |   |
| Small Angle Approximations  |                     |                   |   |
| Inverse Trig – finding values   |                     |                   |   |
| Trig graphs – reciprocal and inverse trig   |                     |                   |   |
| Trigonometric Models  | 000                 |                   |   |
| Exponentials and L  | ogs                 |                   | 51, 11,000, 10, 111   |
| Simplifying Expressions Solving Logarithmic Equations   |                     |                   | Edexcel, OCR and Cambridge  |
| Solving Logarithmic Equations  Solving Natural Logarithmic Equations  |                     |                   | Edexcel, OCR and Cambridge Edexcel, OCR and Cambridge                                 |
| Solving exponential equations   |                     |                   | Edexcel, OCR and Cambridge  Edexcel, OCR and Cambridge                                |
| Linear transformations  |                     |                   | OCR Only  |
| Exponential Models  |                     |                   | ,   |
| Proofs  |                     |                   |   |
| Counter Example   |                     |                   |   |
| Deduction   |                     |                   | AQA   |
| Exhaustion  |                     |                   |   |
| Contradiction   |                     |                   |   |
| Differentiation   | c oquations seeding |                   |   |
| Note: for parametric differentiation see parametr $y=x^n$ differentiation technique   | e equations section |                   | All   |
| Understanding differentiation as a connected rates of change and small increments   |                     |                   | All   |
| Differentiation by 1st principles $-x^n$ types  |                     |                   | 7.11  |
| Differentiation by 1st principles – trig functions  |                     |                   |   |
| Finding gradients   |                     |                   | All   |
| Second derivative   |                     |                   | All   |
| Stationary points (max/min)   |                     |                   | All   |
| Verifying stationary points   |                     |                   | All   |
| Optimisation  |                     |                   | All   |

| Patron of infection Convex(Concese Targets and Normals (finding equations 4 other applications) Fig. 15 / 15 / 15 / 15 / 15 / 15 / 15 / 15   | <u>www.mymath</u>   | <u>iscloud.com</u>     |                       |  |  |  |  |
|--|---|------------------------|-----------------------|--|--|--|--|
| Convexionare  Targetin and Normals (inding equations + other applications) $f = f^{-1} + f^{-1} graphs$ Offerentiation  Offerentiation of ferentiation techniques - chain rule ( $f(x_0)^{-1}, h(x_0) e^{-1/4}, h(x_0) e^{-1/4}$  | Points of Inflection  |                        |                       |  |  |  |  |
| Tangents and Normals (finding equations + other applications)  | Increasing/Decreasing   |                        | AQA only              |  |  |  |  |
| For   For   For graphs   | Convex/Concave  |                        |                       |  |  |  |  |
| Optimisation Composite functions differentiation techniques—chain rule ( ((20))** Inf ((24))** And (24)** And  | Tangents and Normals (finding equations + other applications)                                   |                        | All                   |  |  |  |  |
| Differentiation x in terms of y and actiting answer in terms of x (f(x))*, inf(x), ef(x)*, af(x)*, sinf(x)*, sinf(x)*, ef(x)*, sinf(x)*, sinf(x)*, sinf(x)*, ef(x)*, sinf(x)*, s   | $f \leftrightarrow f' \leftrightarrow f''$ graphs   |                        |                       |  |  |  |  |
| Composite functions differentiation techniques - chain rule {  |   |                        |                       |  |  |  |  |
| If (x), e <sup>(1)</sup> , a <sup>(1)</sup> (2), a <sup>(1)</sup> (3), a <sup>(1</sup> |   |                        |                       |  |  |  |  |
| Product and Curolient Rule Implict Offerendation Rules of Change/Related Rates  Integration Note: for parametric integration see parametric equations section    Fa** Integration Technique  |   |                        | Cambridge Only        |  |  |  |  |
| Implict Differentiation  Note: for parametric integration  Note: for parametric integration seep arametric equations section    J **   Integration Technique   |   |                        | Edexcel and Cambridge |  |  |  |  |
| Integration  Note: for parametric integration see parametric equations section $\int_{-\infty}^{\infty}   \text{Integration Technique}   OCR and Cambridge}   OCR and Cambridge}   OCR and Cambridge   OC$   | Implicit Differentiation  |                        |                       |  |  |  |  |
| Note: for parametric integration see parametric equations section Finding area under a curve Composite functions integration techniques ( (f (x))**, \frac{1}{160}, \text{ eff}(0), \text{ sinf }(x) \text{ etc}) \qquad \qqquad \qqquad \qqqqq \qqqqqq  | Rates of Change/Related Rates   |                        |                       |  |  |  |  |
| Je* Integration Technique   OCR and Cambridge  | Integral  | tion                   |                       |  |  |  |  |
| Finding area under a curve Composite functions integration techniques ( f (x ))* integration by Substitution Integration by Substitution Remain on Sums Officerated Equations  Sequences and Series Arithmetic Series Comentric Series Comentric Series Comentric Series Comentric Series Arithmetic Series Comentric Series Comentric Series Arithmetic Series Comentric Series Comentr   | Note: for parametric integration se   | e parametric equations | section               |  |  |  |  |
| Composite functions integration techniques ( ( f'(x) )** _ f(x) * ef'(x) * sinf(x) * etc) \$   | $\int x^n$ Integration Technique  |                        | OCR and Cambridge     |  |  |  |  |
| Integration by Parts Integration by Substitution by Substitution Integration by Substitution by Substitution Integration by Substitution by Su   | Finding area under a curve  |                        | OCR and Cambridge     |  |  |  |  |
| Integration by Parts Integration by Substitution by Substitution Integration by Substitution by Substitution Integration by Substitution by Su   | Composite functions integration techniques $((f(x))^n, \frac{1}{f(x)}, e^{f(x)}, sinf(x))$ etc) |                        | Cambridge Only        |  |  |  |  |
| Integration by Substitution Trapezium Rule Remann Sums Differential Equations  Sequences and Series  Arithmetic Series Sequences Geometric Series Geometric Ser   |   |                        |                       |  |  |  |  |
| Trapezium Rule Bilemann Sums Differential Equations  Sequences and Series  Arithmetic Series Arithmetic Series Sigma Notation Recursive Sequences Functions Types of functions (one to one, many to one) Basics (notation, composite etc) Finding inverses and knowing when they exist All Modulus (solving equalities and inequalities)  Basic graphs (quartic, cubic, rational exponential, log and trig) Basic graphs (quartic and root) More advanced graphs (modulus, reciprocal trig and inverse trig) Graphing a modulus graph without being given the equation Finding points of intersection and intercepts Finding points of intersection  Numerical Methods Iteration  Parametric Equations  Sketching Domain a Range Finding Points of intersection  Differentiation Integration Finding Areas Modelling  Vectors  20  Cambridge  Cambridge  |   |                        |                       |  |  |  |  |
| Differential Equations   Sequences and Series   Separa Notation   Sedexcel and Cambridge   Separa Notation   Sedexcel and Cambridge   Separa Notation   Sequences   OCR only   OCR only   Sequences   OCR on   |   |                        |                       |  |  |  |  |
| Sequences and Series Arithmetic Series Arithmeti   | Riemann Sums  |                        |                       |  |  |  |  |
| Arithmetic Series Geometric Series Geometric Series Signa Notation Recursive Sequences Functions  Types of functions (one to one, many to one) Basics functions, composite etc) All Modulus foolwing equalities and incount being given the equation Basic graphs (linear, quadratic, cubic, rational exponential, log and trig) Basic graphs (linear, quadratic, cubic, rational exponential, log and trig) Basic graphs (linear, quadratic, cubic, rational exponential, log and trig) Basic graphs (linear, quadratic, cubic, rational exponential, log and trig) Basic graphs (linear, quadratic, cubic, rational exponential, log and trig) Basic graphs (quartic and root) More advanced graphs (modulus, reciprocal trig and inverse trig) Basic graphs (quartic and root) More advanced graphs (modulus, reciprocal trig and inverse trig) Basic graphs (quartic and root) More advanced graphs (modulus, reciprocal trig and inverse trig) Basic graphs (quartic and root) Basic graphs (quartic and root) More advanced graphs (modulus, reciprocal trig and inverse trig) Basic graphs (quartic and root) Basic gra   | Differential Equations  |                        |                       |  |  |  |  |
| Arithmetic Series Geometric Series Geometric Series Signa Notation Recursive Sequences Functions  Types of functions (one to one, many to one) Basics functions, composite etc) All Modulus foolwing equalities and incount being given the equation Basic graphs (linear, quadratic, cubic, rational exponential, log and trig) Basic graphs (linear, quadratic, cubic, rational exponential, log and trig) Basic graphs (linear, quadratic, cubic, rational exponential, log and trig) Basic graphs (linear, quadratic, cubic, rational exponential, log and trig) Basic graphs (linear, quadratic, cubic, rational exponential, log and trig) Basic graphs (quartic and root) More advanced graphs (modulus, reciprocal trig and inverse trig) Basic graphs (quartic and root) More advanced graphs (modulus, reciprocal trig and inverse trig) Basic graphs (quartic and root) More advanced graphs (modulus, reciprocal trig and inverse trig) Basic graphs (quartic and root) Basic graphs (quartic and root) More advanced graphs (modulus, reciprocal trig and inverse trig) Basic graphs (quartic and root) Basic gra   | Sequences a   | nd Series              |                       |  |  |  |  |
| Geometric Series Sigma Notation Sigma Notation Functions Functions Types of functions (one to one, many to one) Basics Industry, composite etc) Finding inverses and knowing when they exist Modules (solving equalities and inequalities) Faraphing Basic graphs (linear, quadratic, cubic, rational exponential, log and trig) Basic graphs (quartic and root) More advanced graphs (modulus, reciprocal trig and inverse trig) Graphing Finding a modulus graph without being given the equation Finding polynomial equation when given a graph Solving graphically Domain and Range  Numerical Methods Heration Newton Raphson  Parametric Equation Finding Points of intersection Newton Raphson  Parametric Equation Finding Points of intersection Integration Finding Points of intersection Integration Finding Points of intersection Vectors  Vectors  O Cambridge  Cambridge  Cambridge  Edexcel onny Ali  Cambridge only  Beack candbridge  Ali  Cambridge Ali  Cambridge  Ali  Ali  Ali  Ali  Ali  Ali  Ali  Al  | -   |                        | Edexcel and Cambridge |  |  |  |  |
| Sigma Notation Recursive Sequences Recursive Sequences Recursive Sequences Functions Types of functions (one to one, many to one) Basics (notation, composite etc) Finding inverses and knowing when they exist Modulus (solving equalities and inequalities) Resident of the sequence of the  |   |                        |                       |  |  |  |  |
| Recursive Sequences  Functions  Functions  Types of functions (one to one, many to one)  Basics (notation, composite etc)  Basics (notation, composite etc)  Basic graphs (gowing equalities and inequalities and  |   |                        |                       |  |  |  |  |
| Functions Types of functions (one to one, many to one)  Basics (notation, composite etc)  All Finding inverses and knowing when they exist  Modulus (solving equalities and inequalities)  Fasic graphs (linear, quadratic, cubic, rational exponential, log and trig)  Basic graphs (linear, quadratic, cubic, rational exponential, log and trig)  Basic graphs (quartic and root)  More advanced graphs (modulus, reciprocal trig and inverse trig)  Graphing  Basic graphs (modulus, graph without being given the equation  Transformations  Finding points of intersection and intercepts Finding a polynomial equation when given a graph  Solving graphically  Domain and Range  Numerical Methods  Iteration  Newton Raphson  Parametric Equations  Sketching  Domain & range Finding points of intersection  Ufferentiation  Integration  Finding points of intersection  Ufferentiation  Integration  Finding Areas  Modelling  Vectors  2D  Cambridge only  Cambri   | •   |                        |                       |  |  |  |  |
| Types of functions (one to one, many to one)  Basics (notation, composite etc)  Finding inverses and Knowing when they exist  Modulus (solving equalities and inequalities)  Fasic graphs (linear, quadratic, cubic, rational exponential, log and trig)  Basic graphs (linear, quadratic, cubic, rational exponential, log and trig)  Basic graphs (linear, quadratic, cubic, rational exponential, log and trig)  More advanced graphs (modulus, reciprocal trig and inverse trig)  More advanced graphs (modulus, reciprocal trig and inverse trig)  More advanced graphs (modulus, reciprocal trig and inverse trig)  More advanced graphs (modulus, reciprocal trig and inverse trig)  More advanced graphs (modulus, reciprocal trig and inverse trig)  All  Cambridge  Cambridge  Cambridge  Finding a polynomial equation when given a graph  Numerical Methods  Iteration  Newton Raphson  Parametric Equations  Sketching  Domain & range  Finding points of intersection  Differentiation  Integration  Integration  Integration  Modelling  Vectors  2D  Cambridge  Cambridge  Cambridge   |   | ons                    |                       |  |  |  |  |
| Basics (notation, composite etc) Finding inverses and knowing when they exist  Modulus (solving equalities and inequalities)  Foraphing  Basic graphs (linear, quadratic, cubic, rational exponential, log and trig)  Basic graphs (quadratic and root) More advanced graphs (modulus, reciprocal trig and inverse trig)  Graphing a modulus graph without being given the equation Finding points of intersection and intercepts Finding a polynomial equation when given a graph  Solving graphically Domain and Range  Numerical Methods  Iteration  Newton Raphson  Parametric Equations  Sketching Domain & range Finding Points of intersection  Domain & range Finding Points of intersection  Finding Points of intersection  Vectors  Vectors  Cambridge  Cambridge  All  All  All  All  All  All  All  A   |   | 5113                   | Cambridge only        |  |  |  |  |
| Finding inverses and knowing when they exist Modulus (solving equalities and inequalities)  Foraphing  Basic graphs (linear, quadratic, cubic, rational exponential, log and trig)  Basic graphs (quartic and root)  More advanced graphs (modulus, reciprocal trig and inverse trig)  Graphing and advanced graphs (modulus, reciprocal trig and inverse trig)  Graphing a modulus graph without being given the equation  Finding points of intersection and intercepts Finding a polynomial equation when given a graph  Solving graphically  Domain and Range  Numerical Methods  Iteration  Newton Raphson  Parametric Equations  Sketching Domain & Cambridge  Finding Points of intersection  Differentiation  Finding Points of intersection  Differentiation  Finding Points of intersection  Finding Aeas  Modelling  Vectors  2D  Cambridge  Cambridge  All  All  Cambridge  All  Cambridge  All  All  All  All  All  All  All  A   |   |                        |                       |  |  |  |  |
| Modulus (solving equalities and inequalities)  Graphing  Basic graphs (linear, quadratic, cubic, rational exponential, log and trig)  Basic graphs (quartic and root)  More advanced graphs (modulus, reciprocal trig and inverse trig)  Graphing a modulus graph without being given the equation  Transformations  Finding points of intersection and intercepts  Finding a polynomial equation when given a graph  Solving graphically  Domain and Range  Numerical Methods  Iteration  Newton Raphson  Parametric Equations  Sketching  Domain & range  Finding Points of intersection  Differentiation  Integration  Finding Reas  Modelling  Vectors  2D  Cambridge only  All  All  All  Cambridge  Cambridge  Cambridge  Cambridge  Cambridge  Cambridge  Cambridge  Cambridge  |   |                        |                       |  |  |  |  |
| Basic graphs (linear, quadratic, cubic, rational exponential, log and trig)  Basic graphs (quartic and root)  More advanced graphs (nodulus, reciprocal trig and inverse trig)  Graphing a modulus graph without being given the equation  Transformations  Finding a polynomial equation when given a graph  Solving graphically  Domain and Range  Numerical Methods  Iteration  Newton Raphson  Parametric Equations  Sketching  Domain & range  Finding Points of intersection  Differentiation  Integration  Finding Points of intersection  Finding Points of intersection  Finding Points of intersection  Wectors  Vectors  D  Cambridge  All  All  All  All  All  All  All  A   |   |                        |                       |  |  |  |  |
| Basic graphs (linear, quadratic, cubic, rational exponential, log and trig)     All       Basic graphs (quartic and root)     Cambridge       More advanced graphs (modulus, reciprocal trig and inverse trig)     Cambridge       Graphing a modulus graph without being given the equation     Cambridge       Transformations     All       Finding points of intersection and intercepts     All       Finding a polynomial equation when given a graph     Cambridge       Solving graphically     AQA and Cambridge       Domain and Range     AQA and Cambridge       Iteration     AQA and Cambridge       Newton Raphson     Parametric Equations       Sketching     Sectorial       Domain & range     Sectorial       Finding Points of intersection     Sectorial       Differentiation     Sectorial       Integration     Sectorial       Finding Areas     Sectorial       Modeling     Cambridge       2D     Cambridge       3D     Cambridge  |   | ing                    |                       |  |  |  |  |
| Basic graphs (quartic and root)  More advanced graphs (modulus, reciprocal trig and inverse trig)  Graphing a modulus graph without being given the equation  Transformations  Finding points of intersection and intercepts  Finding a polynomial equation when given a graph  Solving graphically  Domain and Range  Numerical Methods  Iteration  Newton Raphson  Parametric Equations  Sketching  Domain & range  Finding Points of intersection  Differentiation  Integration  Finding Areas  Modelling  Wectors  2D  3D  Cambridge   |   | 1116                   | All                   |  |  |  |  |
| More advanced graphs (modulus, reciprocal trig and inverse trig)       Cambridge         Graphing a modulus graph without being given the equation       All         Finding points of intersection and intercepts       ————————————————————————————————————  |   |                        | All                   |  |  |  |  |
| Graphing a modulus graph without being given the equation Transformations Finding points of intersection and intercepts Finding a polynomial equation when given a graph Solving graphically Domain and Range  Numerical Methods  Iteration Newton Raphson Parametric Equations  Sketching Domain & range Finding Points of intersection Differentiation Integration Finding Areas Modeling  Vectors  2D  3D  AQA and Cambridge AQA and Cambridge    |   |                        | Cambridge             |  |  |  |  |
| Transformations Finding points of intersection and intercepts Finding a polynomial equation when given a graph Solving graphically Domain and Range  Numerical Methods  Iteration Newton Raphson  Parametric Equations  Sketching Domain & range Finding Points of intersection Differentiation Integration Finding Areas Modelling  Vectors  2D  Cambridge  AQA and Cambridge   |   |                        |                       |  |  |  |  |
| Finding a polynomial equation when given a graph  Solving graphically  Domain and Range  Numerical Methods  Iteration  Newton Raphson  Parametric Equations  Sketching  Domain & range  Finding Points of intersection  Differentiation  Integration  Integration  Integration  Newton Raphson  Order AQA and Cambridge   |   |                        |                       |  |  |  |  |
| Solving graphically Domain and Range  Numerical Methods  Iteration Newton Raphson  Parametric Equations  Sketching Domain & range Finding Points of intersection Differentiation Finding Areas Modelling  Nedelling  Vectors  2D  Cambridge  AQA and Cambridge   | Finding points of intersection and intercepts   |                        |                       |  |  |  |  |
| Domain and Range AQA and Cambridge   Numerical Methods   Iteration <   | Finding a polynomial equation when given a graph  |                        |                       |  |  |  |  |
| Numerical Methods   Iteration  |   |                        |                       |  |  |  |  |
| IterationImage: Company of the properties  |   |                        | AQA and Cambridge     |  |  |  |  |
| IterationImage: Company of the properties  | Numerical N   | Methods                |                       |  |  |  |  |
| Newton RaphsonImage: Combridge of the parametric EquationsSketchingSketchingImage: Combridge of the points of intersectionImage: Combridge of the points of intersectionDifferentiationImage: Combridge of the points of intersectionImage: Combridge of the points of intersectionDifferentiationImage: Combridge of the points of intersectionImage: Combridge of the points of t  |   |                        |                       |  |  |  |  |
| Sketching Domain & range Finding Points of intersection Differentiation Integration Finding Areas Modelling  Vectors  2D  2D  Cambridge 3D  Cambridge 3D  Cambridge  Cambridge  Cambridge  Cambridge   |   |                        |                       |  |  |  |  |
| SketchingSketchingDomain & rangeSketchingFinding Points of intersectionSketchingDifferentiationSketchingIntegrationSketchingFinding AreasSketchingModellingSketchingVectors2DCambridge3DCambridge  | Parametric F  | guations               |                       |  |  |  |  |
| Domain & range Finding Points of intersection Differentiation Integration Finding Areas Modelling  Vectors  2D Cambridge 3D  |   | - A. Marionio          |                       |  |  |  |  |
| Finding Points of intersectionImage: Combridge of the section of the se  | •   |                        |                       |  |  |  |  |
| DifferentiationImage: Combridge of the part of the pa  |   |                        |                       |  |  |  |  |
| IntegrationImage: Combridge of the property of the pr  |   |                        |                       |  |  |  |  |
| Finding Areas Solution   |   |                        |                       |  |  |  |  |
| ModellingModellingVectors2DCambridge3DCambridge  |   |                        |                       |  |  |  |  |
| 2D         Cambridge           3D         Cambridge  |   |                        |                       |  |  |  |  |
| 2D         Cambridge           3D         Cambridge  | Vectors   |                        |                       |  |  |  |  |
| 3D   |   |                        | Cambridge             |  |  |  |  |
|  |   |                        | Cumbridge             |  |  |  |  |
|  | Geometric Problem Solving Types   |                        | Edexcel only          |  |  |  |  |

| A Level Mechanics Topics   | A Level<br>Year 1 | A Level<br>Year 2 | GCSE Further Maths (AQA/Edexcel) or GCSE Additional Maths (OCR/Cambridge) |
|--|-------------------|-------------------|---|
| Kinematics   |                   |                   |   |
| Displacement, velocity and time graphs   |                   |                   |   |
| SUVAT – constant acceleration  |                   |                   |   |
| Differentiating and Integrating to get displacement, velocity, acceleration – non constant accel |                   |                   | Edexcel, OCR and Cambridge  |
| Projectiles  |                   |                   |   |
| Basic Forces   |                   |                   |   |
| Basic horizontal and vertical forces - finding the resultant and magnitude                       |                   |                   |   |
| Basic diagonal forces resolving - finding the resultant, magnitude and angles                    |                   |                   |   |
| Using $f=ma$ to solve basic problems such as boxes on tables etc                                 |                   |                   |   |
| Finding missing angles and forces in force diagrams  |                   |                   |   |
| Connected Particle   | S                 |                   |   |
| Lifts  |                   |                   |   |
| Cars and Trailers  |                   |                   |   |
| Pulleys - Vertical   |                   |                   |   |
| Pulleys – Inclined planes  |                   |                   |   |
| Moments  |                   |                   |   |
| Flat plane – vertical forces   |                   |                   |   |
| Flat plane – diagonal forces   |                   |                   |   |
| Inclined plane – ladders   |                   |                   |   |
| Vectors  |                   |                   |   |
| Basic resolving on forces given in vector form - resultant and magnitude and finding angles      |                   |                   |   |
| SUVAT  |                   |                   |   |
| Differentiating and Integrating to get displacement, velocity, acceleration – non constant accel |                   |                   |   |

| A Level Statistics Topics   | A Level<br>Year 1 | A Level<br>Year 2 | GCSE Further Maths (AQA/Edexcel) or GCSE Additional Maths (OCR/Cambridge) |
|---|-------------------|-------------------|---|
| Data  |                   |                   |   |
| Sampling  |                   |                   |   |
| Large data set (memorised set of facts – doesn't involve maths knowledge)                               |                   |                   |   |
| Mean calculations   |                   |                   |   |
| Standard deviation calculations   |                   |                   |   |
| Quartile Calculations – without Interpolation   |                   |                   |   |
| Quartile Calculations – with Interpolation  |                   |                   |   |
| Outliers  |                   |                   |   |
| Coding  |                   |                   |   |
| Box Plots   |                   |                   |   |
| Cumulative Frequency  |                   |                   |   |
| Histograms  |                   |                   |   |
| Comparing Data  |                   |                   |   |
| Regression and Corre  | lation            |                   |   |
| Definition of correlation   |                   |                   |   |
| Calculating the correlation coefficient $r$ and interpreting it   |                   |                   |   |
| Calculating the line of best fit/least squares regression line and interpreting the slope and intercept |                   |                   |   |
| Using the line of best fit to make predictions  |                   |                   |   |
| Exponential Models  |                   |                   |   |
| Set Notation  |                   |                   |   |
| Mutually exclusive and Independent Events   |                   |                   |   |
| Conditional Events  |                   |                   |   |
| Venn Diagrams   |                   |                   | OCR only  |
| Tree Diagrams   |                   |                   | OCR only  |
| Two Way Tables  |                   |                   | OCR only  |
| Distributions   |                   |                   |   |
| Dealing with Discrete Random Variables – Probability Distributions                                      |                   |                   |   |
| Binomial Distribution   |                   |                   |   |
| Normal Distribution   |                   |                   |   |
| Normal Approximation to Binomial (including Continuity Correction)                                      |                   |                   |   |
| Hypothesis Testir   | g                 |                   |   |
| Binomial Distribution – performing the test, finding critical values and p values                       |                   |                   |   |
| Normal Distribution – performing the test, finding critical values and p values                         |                   |                   |   |
| Correlation – performing the test, finding critical values and p values                                 |                   |                   |   |