Maths

Module 1

Topic Title: GCSE to AS Maths Transition Course, Problem Solving & Foundation Skills

Brief Summary of Content Studied:
Four Ops of fractions (esp mixed numbers); to manipulate surds and indices and present the final answer in a specified form
Change of subject, factorising quadratics, expanding cubics, DOTS, CTS, solving SE's (2 linears, 1 quadratic and 1 linear), sketching straight lines, sketching quadratics, solving quadratics, the quadratic formula, calculate the discriminant, transformation of functions and their graphs, solving linear and quadratic inequalities, mathematical modelling (using quadratics)

Standard uints of quantities, Kinematics, constant acceleration (SUVAT)

Knowledge Organiser:
https://docs.google.com/presentation/d/1N50_U8Z_WvZKLqNqq5cGENcEqVP4NRsCNLFfXxFVYZ4/edit?usp=sharing

Module 2

Topic Title: Problem Solving, Proof & Mathematical Modelling

Brief Summary of Content Studied:
y=mx+c in all forms; gradient of parallel & perpendicular lines, circle geometry, circle theorems, tangents, chords, circles and triangles, solve problems using the discriminant, revisit solving SE (one linear one circle)
Proof, factor and remainder theorems, long division algorithm applied to polynomials, revisit factorising polynomials, Binomial expansion (positive indices), approximations

Representation of Data.

Knowledge Organiser:
https://docs.google.com/presentation/d/1gr-NZBAUPiJD8MYPyC1ZS-AU1z39wH-IUKkcmbGnID8/edit?usp=sharing

Module 3

Topic Title: Problem solving & Proof

Brief Summary of Content Studied:
Find the derivative from first principles, differentiate a variety of and increasingly complex polynomials, find the gradient function; find the equation of tangents and normals, identify, test and justify staionary points and points of inflection, find higher order derivatives, test for increasing/decreasing functions, maxima/minima problems
Integration as the anti-derivative, integrate a variety of and increasingly complex expressions; definite & indefinte integrals; find the equation of a curve, area under a curve, area under a line and a curve, negative areas
Variable acceleration, functions of time, projectiles, revisit mathematical modelling using quadratics.

Maths

Module 4

Topic Title: Problem solving & Mathematical Modelling

Brief Summary of Content Studied:
PT, sine & cosine rules, area of triangle, The unit circle and the trig identities, exact values from special triangles, draw & transform graphs of the trig functions, trig proof, solve trig equations

Manipulation of 2D vectors, position and unit vectors, resultant vectors, parallel vectors, find the magnitude and direction
Draw and compare the graphs of logx base 2 and 2 to the power of x, properties of the functions, compare logs of different bases, rules of logs,solve log equations, solve equations of exps, natural log (lnx) and e^x, mathematical modelling and changing between an exp model and a log model, problem solving; the derivatives of lnx and e^x

Module 5

Topic Title: Application of Pure

Brief Summary of Content Studied:
Newton's first law, Newton's second law, force diagrams, forces modelled as vectors, pulleys, connected particles, bodies in motion
Sampling methods, sampling techniques, data collection and representation (using technology), interpretaion of data by measures of location and spread, bivariate data
Probability of combined events; venn diagrams, tree diagrams, set notation, addition equation, independence and mutual exclusivity, CDF, PDF, DRV, uniform distribtion and Binomial distribution, hypothesis testing (by p-value and critical region)

Module 6

Topic Title: Revision and Consolidation, Series & Sequences

Brief Summary of Content Studied:
AP's and GP's, oscillating, periodic, increasing/decreasing series, derive the formula for sum of a series from first principles, sum to infinity, problem solving, Binomial expansion (negative and fraction indices) and range of validity