**GCSE Level 2 Further Mathematics**

**Exam Board: AQA**

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| **Term**  | **INTENT** | **IMPLEMENTATION** | **IMPACT**  |
| **Substantive Knowledge**This is the specific, factual content for the topic, which should be connected into a careful sequence of learning. | **Disciplinary Knowledge (Skills)**This is the action taken within a particular topic in order to gain substantive knowledge. | **Assessment opportunities**What assessments will be used to measure student progress?Evidence of how well students have learned the intended content. |
| **Year 10 Set 1****Spring Term****2B** | **Algebra**Simplifying and solving equationsExpanding bracketsBinomial expansionFactorising and rearranging formulaeSimplifying and solving algebraic fractionsCompleting the square**Number**SurdsProduct Rule | * Expand and simplify brackets
* Use Pascal’s triangle to work out the coefficient of xn term
* Factorise expressions fully
* Manipulate rational expressions
* Manipulate formulaes
* Knowledge and use of numbers and the number system including fractions, decimals, percentages, ratio, proportion and order of operations are expected
* Work out how many 5-digit odd numbers can be formed using the digits 1 3 4 6 8 with no repetition of any digit
* Operations of surds
* Rationalise and simplify
 | End of chapter topic test (with peer marking) Chapter revision exercise via textbook End of term formal assessments |
| **Year 10****Summer Term****3A** | **Algebra**FunctionsGraphs of functions and linear equationsEquations of linesGraphs of quadratics, exponentials and inverse functionsGraphs of functions with partial domainsEquation of a circle with centre (a,b)Tangents of circles | * Notation f (x) will be used, e.g. f (x) = x2 – 9
* Domain may be expressed as, for example,x > 2, or ‘for all x, except x = 0’ and range may be expressed as f (x) > – 1
* The result of two or more functions, say f and g, acting in succession. fg (x) is g followed by f
* The inverse function of f is written f-1
* Domains will be chosen for f to make f one-one
* Graphs could be linear, quadratic, exponential and restricted to no more than 3 domains
* Exponential graphs will be of the form y = abx and y = ab-x , where a and b are rational numbers
* Sketch the graph of a quadratic
* Solutions of quadratics to include solution by factorisation, by graph, by completing the square or by formula
* Problems will be set in a variety of contexts, which result in the solution of linear or quadratic equations
* Algebraic and graphical solution of simultaneous equations in two unknowns, where the equations could both be linear or one linear and one second order
 | End of chapter topic test (with peer marking) Chapter revision exercise via textbook End of term formal assessments |
| **Year 10****Summer Term****3B** | **Geometry**Circle TheoremsTrigonometryTrigonometric IdentitiesSine RuleCosine RuleLines and planes in three dimensions**Algebra**Factor TheoremAlgebraic proofSequencesSimultaneous equations with three unknowns | * Understand and construct geometrical proofs using formal arguments
* Sine and cosine rules in scalene triangles; area of a triangle = 0.5absinC
* Use of Pythagoras’ theorem in 2D and 3D
* Be able to apply trigonometry and Pythagoras’ theorem to 2 and 3 dimensional problems
* Sketch and use graphs of y = sin x, y = cos x and y = tan x for angles of any size
* Be able to use the definitions sin θ, cos θ and tan θ, for any positive angle up to 360°(measured in degrees only)
* Knowledge and use of 30°, 60°, 90° triangles and 45°, 45°, 90° triangles
* Know and use tanθ =sinθ /cos θ = and sin2θ=2sinθcosθ
* Solution of simple trigonometric equations in given interval
* Use of the factor theorem for rational values of the variable for polynomials
* Completing the square
* Drawing and sketching of functions Interpretation of graphs
* Algebraic solution of linear equations in three unknowns
 | End of chapter topic test (with peer marking) Chapter revision exercise via textbook End of term formal assessmentsY10 End of Year Trial Exams |
| **Year 11 Autumn Term 1A** | **Calculus**DifferentiationTangents and NormalsIncreasing and decreasing functionsStationary Points**Matrices**Multipling matricesTransformationsIdentity Matrix and the unit squareCombining transformations | * Know that the gradient function dy/d x gives the gradient of the curve and measures the rate of change of y with respect to x
* Know that the gradient of a function is the gradient of the tangent at that point
* Differentiation of kxn where n is an integer, and the sum of such function
* The equation of a tangent and normal at any point on a curve
* Increasing and decreasing functions
* Understand and use the notation d2y/dx2
* Use of differentiation to find maxima and minima points on a curve
* Using calculus to find maxima and minima in simple problems
* Sketch/ interpret a curve with known maximum and minimum points
* Multiplication of matrices
* The identity matrix **I**
* Transformations of the unit square in the x – y plane
* Combination of transformations
 | End of chapter topic test (with peer marking) Chapter revision exercise via textbook End of term formal assessmentsY11 Trial Exams |