**Knowledge Organiser**

**Further Maths GCSE Year 11 Set 1**

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| **Unit** | **Topic** |
| **Algebra I****1.1****1.2****1.3****1.4****1.5****1.6****1.7****1.8** | Number and the number systemSimplifying expressionsSolving linear equationsAlgebra and numberExpanding bracketsThe binomial expansionManipulating surdsThe product rule for counting  |
| **Algebra II****2.1****2.2****2.3****2.4****2.5** | FactorisingRearranging formulaeSimplifying algebraic fractionsSolving linear equations involving fractionsCompleting the Square  |
| **Algebra III****3.1****3.2****3.3****3.4****3.5****3.6****3.7****3.8****3.9****3.10** | Function notationDomain and range of a functionComposite functionsGraphs of functionsGraphs of linear functionsFinding the equation of a line Graphs of quadratic functionsInverse functionsGraphs of exponential functionsGraphs of functions with up to three parts to their domain |
| **Algebra IV****4.1****4.2****4.3****4.4****4.5****4.6****4.7****4.8****4.9****4.10** | Quadratic equationsSimultaneous equations in two unknownsThe factor theoremLinear inequalitiesQuadratic inequalitiesIndicesAlgebraic proofSequencesLimiting value of a sequenceSimultaneous equations in three unknowns |

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| **Unit** | **Topic** |
| **Co-ordinate Geometry****5.1****5.2****5.3****5.4****5.5****5.6****5.7** | Parallel and perpendicular linesThe distance between two pointsThe midpoint of a line joining two pointsEquation of a straight lineThe intersection of two linesDividing a line in a given ratioEquation of a circle |
| **Geometry I** **6.1****6.2****6.3****6.4****6.5****6.6****6.7****6.8****6.9****6.10****6.11** | MensurationPythagoras’ TheoremAngle factsCircle theoremsGeometric proofTrigonometry in two dimensionsTrigonometric functions for angles of any sizeThe sine and cosine graphsThe tangent graphSolutions of trigonometric equationsTrigonometric identities |
| **Geometry II** **7.1****7.2****7.3****7.4****7.5****7.6****7.7** | The area of a triangleThe sine ruleThe cosine ruleUsing the sine and cosine rules togetherProblems in three dimensionsLines and planes in three dimensions |
| **Calculus****8.1****8.2****8.3****8.4****8.5****8.6****8.7** | The gradient of a curveDifferentiationDifferentiation using standard resultsTangents and normalsIncreasing and decreasing functionsThe second derivativeStationary points |
| **Matrices****9.1****9.2****9.3****9.4****9.5** | Multiplying matricesTransformationsThe identity matrixTransformations of the unit squareCombining transformations |

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