

## Y11 Mock Exam Preparation: *Further Maths*

### Mock Exam(s):

Paper 1: Non-calculator - 105 minutes

Paper 2: Calculator - 105 minutes

| Revision Topic List   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
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| Content               | Skills                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| - Number              | <ul style="list-style-type: none"><li>- Product rule for counting</li><li>- Calculating with standard form</li><li>- Manipulation of surds, including rationalising the denominator</li><li>- Manipulation of index numbers</li><li>- Index laws, including fractional and negative indice</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| - Algebra             | <ul style="list-style-type: none"><li>- Expand Triple Brackets</li><li>- Factorising</li><li>- Use and manipulation of formulae and expressions</li><li>- Limiting value of a sequence as <math>n \rightarrow \infty</math></li><li>- Simplify Algebraic Fractions</li><li>- Piecewise functions</li><li>- Dividing a polynomial</li><li>- Factor theorem</li><li>- Form and solve linear inequalities</li><li>- Manipulation of rational expressions: Use of <math>+</math> <math>-</math> <math>\times</math> <math>\div</math> for algebraic fractions with denominators being numeric, linear or quadratic</li><li>- Solving quadratics</li><li>- Cubic graphs</li><li>- Linear and quadratic Sequences</li><li>- Algebraic solution of simultaneous equations in two unknowns, where the equations could both be linear or one linear and one second order</li><li>- Composite and inverse Functions</li><li>- <math>n</math>th terms of linear and quadratic sequences</li><li>- Domain and range of a function</li><li>- Exponential Equations</li><li>- Expand <math>(a + b)^n</math> for positive integer <math>n</math> (Binomial expansion - can use Pascal's)</li></ul> |
| - Coordinate geometry | <ul style="list-style-type: none"><li>- Drawing linear graphs</li><li>- Equation of a Line</li><li>- Know the relationship between the</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

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|            | <p>gradients of parallel and perpendicular lines</p> <ul style="list-style-type: none"> <li>- Use of quadratic and linear graphs to solve an equation</li> <li>- Points of Intersection and Turning Points</li> <li>- Understand the equation of a circle with centre (a, b) and radius r</li> <li>- Points of Intersection and Turning Points</li> <li>- Equation of a straight line</li> <li>- Use Pythagoras' theorem to calculate the distance between two points</li> </ul>                                                                                                                                                                                                                                                                                                                                         |
| - Calculus | <ul style="list-style-type: none"> <li>- Differentiate a function</li> <li>- Use of differentiation to find stationary point</li> <li>- Understand and use the 2nd derivative</li> <li>- Using calculus to find maxima and minima in simple problems</li> <li>- Know that the gradient of a function is the gradient of the tangent at that point.</li> <li>- The equation of a tangent and normal at any point on a curve</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                    |
| - Matrices | <ul style="list-style-type: none"> <li>- Matrix multiplication and solving equations</li> <li>- Matrix transformations</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| - Geometry | <ul style="list-style-type: none"> <li>- Be able to apply pythagoras' theorem and trigonometry in right and non-right angled triangles with/without a calculator</li> <li>- Non-Right Angle Trigonometry</li> <li>- Exact trigonometric values and the cosine rule</li> <li>- 3-D Pythagoras' theorem</li> <li>- Surface Area and 3D Trigonometry</li> <li>- Understand and use circle theorems</li> <li>- Know and use <math>\tan\theta = \sin\theta / \cos\theta</math> and <math>\sin^2\theta + \cos^2\theta = 1</math></li> <li>- Solution of simple trigonometric equations in given intervals</li> <li>- Be able to use the definitions <math>\sin \theta</math>, <math>\cos \theta</math> and <math>\tan \theta</math>, for any positive angle up to <math>360^\circ</math> (measured in degrees only)</li> </ul> |

Tips on different revision techniques, including subject specific activities can be found in the [Student Study Support Guide](#).

**Top Further Maths websites for revision are:**

**Corbett Maths - <https://corbettmaths.com/more/further-maths>**

**1st class Maths - <https://www.1stclassmaths.com/l2-further-maths>**