# Subject: Maths Pure Curriculum

## Year 12

William Hulme's Grammar School
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| Overview | |
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| | Maths A' Level (Edexcel)<br>Designed to advance learners' skills while developing knowledge, Edexcel's qualifications help learners either progress to higher education or go directly into employment. They are grounded in the quality and traditions of the British education system made relevant for today's UK and international learner. |

| Autumn Term | Half Term 1 | Half Term 2 | Assessment |
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| | **Algebraic Expressions**<br>■ Index Laws<br>■ Expanding Brackets<br>■ Factorising<br>■ Negative and Fractional Indices<br>■ Surds<br>■ Rationalising Denominators<br>**Quadratics**<br>■ Solving Quadratic Equations<br>■ Completing the Square<br>■ Functions<br>■ Quadratic Graphs<br>■ The Discriminant<br>■ Modelling with Quadratics<br>**Equations and Inequalities**<br>■ Linear Simultaneous Equations<br>■ Quadratic Simultaneous Equations<br>■ Simultaneous Equations on Graphs<br>■ Linear Inequalities<br>■ Quadratic Inequalities<br>■ Inequalities on Graphs<br>■ Regions | **Graphs and Transformations**<br>■ Cubic Graphs<br>■ Quartic Graphs<br>■ Reciprocal Graphs<br>■ Points of Intersection<br>■ Translating Graphs<br>■ Stretching Graphs<br>■ Transforming Functions<br>**Straight Line Graphs**<br>■ y=mx+c<br>■ Equations of Straight Lines<br>■ Parallel and Perpendicular Lines<br>■ Length and Area<br>■ Modelling with Straight Lines<br>**Circles**<br>■ Midpoints and Perpendicular Bisectors<br>■ Equations of a Circle<br>■ Intersection of Straight Lines and Circles<br>■ Use Tangent and Chord Properties<br>■ Circles and Triangles | We start the year with a baseline test in the first 2 weeks.<br><br>We do a second assessment in the first week after half term. Just Pure.<br><br>. |

| Spring Term | Half Term 3 | Half Term 4 | Assessment |
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| | **Algebraic Methods**<br>■ Algebraic Fractions<br>■ Dividing Polynomials<br>■ The Factor Theorem<br>■ Mathematical Proof<br>■ Methods of Proof<br>**The Binomial Expansion**<br>■ Pascal's Triangle<br>■ Factorial Notation<br>■ The Binomial Expansion<br>■ Solving Binomial Problems<br>■ Binomial Estimation<br>**Trigonometric Ratios**<br>■ The Cosine Rule<br>■ The Sine Rule<br>■ Areas of Triangles<br>■ Solving Triangle Problems | **Trigonometric Identities and Equations**<br>■ Angles in All Four Quadrants<br>■ Exact Values of Trigonometric Ratios<br>■ Trigonometric Identities<br>■ Simple Trigonometric Equations<br>■ Harder Trigonometric Equations<br>■ Equations and Identities<br>**Vectors**<br>■ Vectors<br>■ Representing Vectors<br>■ Magnitude and Direction<br>■ Position Vectors<br>■ Solving Geometric Problems<br>■ Modelling with Vectors | A formal assessment takes place in Pure and Applied January HT3 in first 2 weeks.<br>A formal assessment in Pure only last week before easter. |

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| **Spring Term** | ■ Graphs of sine,cosine and Tangent<br>■ Transforming Trigonometric Graphs | | |

| | Half Term 5 | Half Term 6 | Assessment |
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| **Summer Term** | Differentiation<br>■ Gradients of Curves<br>■ Finding the Derivative<br>■ Differentiating x^ n<br>■ Differentiating Quadratics<br>■ Differentiating Functions with Two or More Terms<br>■ Gradients, Tangents and Normal<br>■ Increasing and Decreasing Functions<br>■ Second Order Derivatives<br>■ Stationary Points<br>■ Sketching Gradient Functions<br>■ Modelling with Differentiation<br><br>Integration<br>■ Integrating x^n<br>■ Indefinite Integrals<br>■ Finding Functions<br>■ Definite Integrals | **Integration continued.**<br>■ Areas Under Curves<br>■ Areas Under the x-axis<br>■ Areas Between Curves and Lines<br><br>**Exponentials and Logarithms**<br>■ Exponential Functions<br>■ y=e^x<br>■ Exponential Modelling<br>■ Logarithms<br>■ Laws of Logarithms<br>■ Solving Equations Using Logarithms<br>■ Working with Natural Logarithms<br>■ Logarithms and Non-linear Data | The main assessment in HT5 & 6 take place shortly after half term and are a full set of summer exams. |

| Useful Resources for Supporting Your Child at Home: | Homework: |
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| https://integralmaths.org/<br>https://padlet.com/andrewharrison6/ks5-resources-uej0gwybac1nnc9f | Homework is much more extensive, and we expect students to take control of their own work and spend longer on It (a minimum of 300 mins per week).<br>Minimum Expectations are:<br>■ All questions especially “P” & “E” questions from exercises in the textbooks are to be completed self-marked and corrected.<br>■ All MEI Section test to be completed online this is marked by the online program<br>■ When requested Topic Assessment tests and exam practice questions might be set by teachers.<br>Other Topic specific questions are available in Class Material in Teams. |