

<b>Subject</b>	Mathematics
<b>Curriculum intent</b>	<p>The Mathematics department strives to equip our pupils with the skills and knowledge to be able to solve problems, think logically and cope with numerical challenges in everyday life.</p> <p>We believe all pupils are capable of achieving high standards and become able mathematicians. We follow a mastery approach to teaching and learning and believe pupils need to be fluent in the fundamentals of mathematics before moving on.</p> <p>We develop conceptual understanding so that students can recall and apply knowledge rapidly and accurately to new problems. Students are regularly challenged with rich and sophisticated tasks before any acceleration through new content.</p> <p>Staff work in close collaboration with each other across Windsor Academy Trust to plan and deliver the curriculum using the most impactful teaching techniques. Research, resources and ideas are regularly shared among the team to enhance our teaching and offer students variety in lessons.</p>
<b>Key Stage 3</b>	<p>Schemes of work build on the KS2 Primary curriculum, providing the foundation for academic success in examinations. Years 7 and 8 are introduced to the 27 mathematical threshold concepts which underpin all the concepts studied while at the academy. In year 9 these threshold concepts are developed further in the preparation to study the GCSE course.</p> <p>These are the Threshold Concepts that have been developed by the subject departments across all Trust schools:</p> <p>TC1. <b>Expressions:</b> To understand and manipulate algebraic and numerical expressions</p> <p>TC2. <b>Proof:</b> To show the equivalence of expressions</p> <p>TC3. <b>Numeracy:</b> To work fluently with time, positive and negative integers and decimals</p> <p>TC4. <b>Approximation:</b> To use rounding to check, estimate and communicate solutions</p> <p>TC5. <b>Shapes:</b> To know and use the properties of 2D and 3D shapes</p> <p>TC6. <b>Dimensionality:</b> To understand measures of length, area and volume</p> <p>TC7. <b>Integers:</b> To know and use number properties</p> <p>TC8. <b>Non-integers:</b> To understand the equivalence of and work with fractions, decimals and percentages and have an appreciation of irrational numbers</p> <p>TC9. <b>Co-ordinates:</b> To describe position on xy axes</p> <p>TC10. <b>Functionality:</b> To understand the language and notation of an input and output system</p> <p>TC11. <b>Multiplicativity:</b> To solve problems involving variables in proportion (requiring multiplication and division)</p> <p>TC12. <b>Ratio:</b> To understand ratio notation and develop skills to solve a variety of problems involving ratio</p> <p>TC13. <b>Inverse:</b> To undo mathematical operations in the correct order to solve problems</p> <p>TC14. <b>Modelling:</b> To construct and solve from real life contexts</p>

	<p>TC15. <b>Collect:</b> To specify, plan and collect appropriate data to test hypotheses</p> <p>TC16. <b>Display:</b> To select and construct appropriate charts and diagrams</p> <p>TC17. <b>Analyse:</b> To calculate measures of central tendency and spread</p> <p>TC18. <b>Interpret:</b> To compare distributions</p> <p>TC19. <b>Predict:</b> To calculate risk through probabilities</p> <p>TC20. <b>Formulaity:</b> To understand, use and construct a variety of formulae</p> <p>TC21. <b>Rearrange:</b> To manipulate into equivalent forms</p> <p>TC22. <b>Proportionality:</b> To apply multiplicative reasoning to solve problems in a variety of contexts</p> <p>TC23. <b>Congruence:</b> To construct and describe transformations that result in congruent images</p> <p>TC24. <b>Turn:</b> To understand that turn is represented by angles and can be measured in degrees</p> <p>TC25. <b>Angles:</b> To know and use angle facts in a variety of contexts</p> <p>TC26. <b>Linearity:</b> To understand the relationship between sequences and graphical representations</p> <p>TC27. <b>Gradient:</b> To understand the concept of rate of change</p>
<p><b>Key Stage 4</b></p>	<p>All students follow the Edexcel Mathematics GCSE syllabus. Students take their GCSE at the end of Year 11 at either the foundation or higher tier of entry.</p> <p>The GCSE syllabus is broken into 5 topic areas: number, algebra, ratio, geometry and probability and statistics.</p> <p>Building on skills learnt at Key Stage 3, students learn to solve complex problems and build fluency in their mathematical approaches. Problem solving makes up 40% of the foundation tier examinations and 50% of the higher tier examinations. The remainder of each exam tests mathematical fluency.</p> <p>Students will be assessed in three written papers each contributing 33% to the final grade. Examinations are 1 hour 30 minutes long for both Higher and Foundation, only the first paper is non-calculator, with a scientific calculator being essential for the second and third papers.</p>
<p><b>Key Stage 5</b></p>	<p>Students study the MEI (OCR) syllabus, deepening understanding of concepts learnt during lower school. Students are taught pure mathematics, statistics and mechanics which give them a breadth of the subject which links with other subjects. The A2 course consists of 3 final equally weighted 2 hour exams, pure with mechanics, pure with statistics and pure with comprehension.</p> <p>Without advanced mathematical techniques many scientific breakthroughs would be harder if not impossible to achieve. A level maths is a challenging subject, requiring aptitude, perseverance and determination, but it is very rewarding and is looked upon favourably by Higher Education Institutions and employers even if the content is not directly required.</p> <p>Maths A level gives you skills in: designing and conducting observational and</p>

experimental studies through mathematical modelling, analysing and interpreting data, finding patterns and drawing conclusions, approaching problems in an analytical and rigorous way, formulating theories and applying them to solve problems, dealing with abstract concepts; presenting mathematical arguments and conclusions with accuracy and clarity and logical thinking. You will also have the general skills that employers expect, including communication skills, time management, organisational skills, teamwork skills and working methodically and accurately.

Maths A Level is a requirement for some careers within many Engineering and Science fields. In addition Maths is often a preferred choice at A Level for many Research, Business and Accounting careers. Many other employers that have no requirement for a maths qualification also favour maths candidates due to the logical and analytical way in which a mathematician's mind works and the fact that you have to be intelligent to pass such a challenging subject.