

SUMMER WORK MATHEMATICS

Head of Department

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Exam Board

Edexcel

Specification

AS Level 8MA0

A Level 9MA0

COURSE DETAILS

Examination

The AS Level Mathematics course is examined at the end of Year 12.

The A Level Mathematics course is examined as a whole at end of Year 13.

AS Level Mathematics:

Pure Mathematics and Applied Mathematics (Year 12)

Students will study elements of Pure Mathematics (proof, algebra and functions, coordinate geometry, sequences and series, trigonometry, exponentials and logarithms, differentiation, integration, and vectors), elements of Statistics (statistical sampling, data presentation and interpretation, probability, statistical distributions, statistical hypothesis testing) and elements of Mechanics (quantities and units, kinematics, forces and Newton's laws).

A Level Mathematics:

Pure Mathematics and Applied Mathematics (Year 13)

Students will study elements of Pure Mathematics (proof, algebra and functions, coordinate geometry, sequences and series, trigonometry, exponentials and logarithms, differentiation, integration, numerical methods and vectors), elements of Statistics (statistical sampling, data presentation and interpretation, probability, statistical distributions, statistical hypothesis testing) and elements of Mechanics (quantities and units, kinematics, forces, Newton's laws and moments).

SUMMER WORK FOR INTRODUCTION TO YEAR 12

	Task	Description
1.	Essential work prior to starting the A Level Mathematics course	<p>Complete the attached topic tests according to the schedule below, checking your answers against the mark schemes only after you have finished. It is recommended you work through these on a weekly basis to keep your Maths skills sharp, rather than doing everything at the beginning of the summer holidays. The expectation is that you are confident with all of these topics, and you will be assessed on them when you start the course in September. If there are any areas that need revision, refer to the attached "Summer work topic list" with details of the Dr Frost Maths topic numbers, and use the website to complete further practice questions - https://www.drfrost.org/. The other websites listed below can be used for additional revision.</p> <p>Week 1 – a) Index Laws & b) Manipulating Polynomials Week 2 – c) Factorising & d) Surds Week 3 – e) Solving Quadratic Equations & f) Completing the square Week 4 - g) Solving simultaneous equations & h) Solving Inequalities Week 5 – i) Equation of a straight line & j) Trigonometry (sine, cosine & area) Week 6 – k) Mixed exercise questions</p>
2.	Further Revision / Useful Websites	<p>Use the following websites to consolidate any areas you feel you need to, or to further your understanding:</p> <p>https://www.drfrost.org/ https://www.mathsgenie.co.uk/ http://furthermaths.org.uk/gcse https://mei.org.uk/students</p>

SUGGESTED READING:

- A Mathematician's Apology by G.H. Hardy (CUP, 1992)
- Fermat's Last Theorem by Simon Singh (Fourth Estate, 2002)
- The Music of the Primes by Marcus du Sautoy (Harper-Collins, 2003)
- Mathematics: a very short introduction by Timothy Gowers (CUP, 2002)
- Archimedes' Revenge by P. Hoffman (Penguin, 1991)
- Surely You're Joking, Mr. Feynman by R.P. Feynman (Arrow Books, 1992)
- Solving Mathematical Problems by Terence Tao (OUP, 2006)
- The Pleasures of Counting by T.W. Körner (CUP, 1996)