Wallington High School for Girls
Sixth Form

Subject: Further Mathematics	**Exam board: Edexcel**

Course information:

Students studying Further Maths will complete the Maths A-level content in year 12 and the Further Mathematics A-level content in year 13. The Mathematics A-level is a demanding but exciting course, covering a wide range of elements from pure mathematics, statistics and mechanics. There is a focus on proof, problem-solving and modelling designed to develop mathematical thinking, understanding and skills in working scientifically. It will be examined at the end of year 13.

You will sit three examination papers as follows:

Paper 1 Pure Mathematics	1/3	2 hours
Paper 2 Pure Mathematics	1/3	2 hours
Paper 3 Statistics and Mechanics	1/3	2 hours

They will then extend their knowledge of Further Pure and Applied Mathematics by studying topics such as Proof, Complex numbers, Matrices, Polar coordinates, Hyperbolic functions, Differential equations; Momentum and Collisions; Discrete Probability distributions and Chi Squared tests.

In addition to the three Mathematics A-level Papers, students will take a further four examination papers for Further Mathematics at the end of year 13 as follows:

Two Core Pure papers:

Paper 1 Core Pure Mathematics 1	25%	1½ hours
Paper 2 Core Pure Mathematics 2	25%	1½ hours

And two Applied papers:

Paper 1 Further Mechanics 1	25%	1½ hours
Paper 2 Further Statistics 1	25%	1½ hours

Students will need the following calculator throughout the course:
Casio FX-991CW or Casio FX-991EX(older model) or Casio fx-CG100 (graphical calculator)

We use the following text books in Year 12:
Edexcel Pure Mathematics Year 1/AS Textbook – Pearson (ISBN: 9781292183398)
Edexcel Statistics & Mechanics Year 1/AS Textbook – Pearson (ISBN: 9781292232539)
Edexcel A Level Mathematics Pure Mathematics Year 2 Textbook – Pearson (ISBN: 9781292183404)
Edexcel A Level Mathematics Statistics & Mechanics Year 2 Textbook – Pearson (ISBN: 9781446944073)

In Year 13 we can provide four additional further mathematics textbooks for you to use.

Summer Transition Work:

Task 1:
Step 1. Work through the example questions in the transition booklet. This can be found in the Maths folder (these correspond to each chapter of the Y12 Pure textbook but highlight the overlap with GCSE Maths. Please note, chapter 8 has not been included)

Step 2. Watch the videos (linked here) for help and to check your solutions

Step 3. If more support is needed, try the end of chapter exam questions and use the mark schemes

to check your work (linked here)

- You will need to bring in your marked solutions from step 1 and any additional work you may have done. This will be checked by a teacher during the first week.
- You will sit an assessment in your first week which covers this overlapping content with GCSE to check your understanding. This will be marked by your teacher with any additional support provided, starting in the Autumn term.

Topics that will be tested in the Further Maths Skills Test:

Algebra	Algebraic Expressions	
	Quadratics	
	Equations and Inequalities	
	Algebraic Fractions	
Coordinate Geometry	Graphs and Transformations	
	Straight Line Graphs	
	Circles	
Trigonometry	Trigonometric Ratios	
	Trigonometric Identities and Equations	
	Sine and Cosine rule and area of a triangle	
Vectors	Vector arithmetic	
	Vector Representation and geometric problems	

If students require additional support to that given above, they can try the following websites:

https://amsp.org.uk/resource/gcse-alevel-transition-resources
http://www.cimt.org.uk/projects/mepres/step-up/index.htm

Task 2 - Problem Solving Preparation:

To help develop your mathematical thinking skills and problem solving we would like you to complete the 2020 SMC Paper, which can be found at: Senior Mathematical Challenge archive | UK Mathematics Trust (ukmt.org.uk). You should then mark the paper and attempt any corrections. We would expect completing the 2020 SMC Paper and reviewing it carefully to take 2-3 hours.

If you would like help to work through this and really understand the solutions you can enrol on this free course: Get ready for the Senior Maths Challenge (mathsaurus.com)

Approximate completion time: Task 1 – 4-5 hours, Task 2 - 2-3 hours. Please note, this does not include any additional time needed to relearn a topic first as this will vary greatly depending on the student.

Suggested Summer Wider Reading:

We would recommend a few summer reads. Either: –

- Select a book (14+) from the nrich reading list: Recommended Books (nrich.maths.org/books) such as "Mathematics: A very short introduction", Timothy Gowers or "Fermat's Last Theorem", Simon Singh, **ISBN number:** 978-0192853615 or 978-1841157917
- Read maths articles from https://plus.maths.org/

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