

<b>Subject:</b>	Mathematics
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<b>Teachers:</b>	Mr Heighway Mrs Petford Mrs Wallace Mrs Roberts Mrs Patel
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<b>Exam Board:</b>	Edexcel
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## NEWPORT GIRLS' HIGH SCHOOL

## KS5 CURRICULUM OVERVIEW

<b>Curriculum Intent &amp; Organisation</b>	
Studying the Edexcel mathematics A level will extend their range of mathematical skills and techniques but will also encourage students to use their mathematical knowledge to make logical and reasoned decisions in solving problems both within pure mathematics and in a variety of contexts. Their ability to interpret solutions and communicate their interpretation effectively will also be improved.	
<b>Examination Information</b>	<b>Facilitating Subject?</b>
Mathematics examinations compile of three two-hour papers taken at the end of the two-year course, with no coursework. They are Paper 1: Pure mathematics, Paper 2: Pure mathematics and Paper 3: Statistics and Mechanics	Yes
<b>Impact of Prior Learning from KS4</b>	
The development of algebra skills and reasoning feature heavily throughout the GCSE course which help build the foundations for the A level mathematics course. There is a crossover of topics at the beginning of the A level course, which help bridge the gap. Also, students who complete the further mathematics level 2 qualification are well equipped to handle the more complex algebra/concepts that they face during the first year as they are more familiar with them. The summer work involves ensuring that their algebra skills are of the standard required to successfully access the course and it helps identify areas that the teachers can support the students with early on.	
<b>Equipment Required for this course</b>	
<ul style="list-style-type: none"> <li>• Standard classroom stationery</li> <li>• Calculator that has an iterative function and statistical distributions for example the Casio Classwiz FX-991EX</li> <li>• Own lined/squared paper</li> </ul>	

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<b>Curriculum Implementation – Areas of Focus Year 12</b>		
<b>Autumn Term</b>	<b>Spring Term</b>	<b>Summer Term</b>
<ul style="list-style-type: none"> <li>• Algebraic expressions</li> <li>• Quadratic functions</li> <li>• Equations</li> <li>• Differentiation</li> <li>• Binomial expansion</li> <li>• Polynomials</li> <li>• Integration</li> <li>• Quantities and units in mechanics</li> <li>• Kinematics – constant acceleration</li> <li>• Data presentation and interpretation</li> <li>• Binomial distribution</li> <li>• Vectors (2D)</li> <li>• Trigonometry</li> <li>• Co-ordinate geometry</li> </ul>	<ul style="list-style-type: none"> <li>• Probability</li> <li>• Statistical sampling</li> <li>• Forces and Newton’s laws of motion</li> <li>• Kinematics – variable acceleration</li> <li>• Inequalities</li> <li>• Graphs and transformations</li> <li>• Hypothesis testing</li> <li>• Data presentation and interpretation</li> <li>• Exponentials and logarithms</li> </ul>	<ul style="list-style-type: none"> <li>• Algebraic and partial fractions</li> <li>• Normal distribution</li> <li>• Proof</li> <li>• Trigonometry – radians, small angles, compound angles, reciprocal and inverse functions</li> <li>• Resolving forces</li> <li>• Kinematics – constant acceleration in 2D</li> </ul>

<b>Curriculum Implementation – Areas of Focus Year 13</b>		
<b>Autumn Term</b>	<b>Spring Term</b>	<b>Summer Term</b>
<ul style="list-style-type: none"> <li>• Functions and modelling</li> <li>• Series and sequences</li> <li>• Differentiation</li> <li>• Projectiles</li> <li>• Applications of forces</li> <li>• Integration</li> </ul>	<ul style="list-style-type: none"> <li>• Trigonometry – arcs and sectors, proofs, harmonic form</li> <li>• The binomial theorem</li> <li>• Probability</li> <li>• Parametric equations</li> <li>• Variable acceleration in 2D</li> <li>• Moments</li> </ul>	<ul style="list-style-type: none"> <li>• Numerical methods</li> <li>• Applications of forces</li> <li>• Vectors (3D)</li> <li>• Regression and correlation</li> <li>• Revision and exam practice</li> </ul>

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### Impact / Outcomes

Learning will be assessed throughout the course by:

- Homework tasks marked using the NGHS marking policy
- Regular unit assessments
- Mock examinations during the spring term in year 12, the summer term in year 12 and the spring term in year 13.

### Homework / Self Study

Homework comprises of a variety of exercise sheets, questions from the ActiveLearn online text books, past examination questions and online worksheets completed on the 'drfrostmaths' website. Students are expected spend their self-study time completing tasks from in lesson, working through exercises on 'drfrostmaths' and utilising the support material and as well as ActiveLearn.

### Ways to support learning

To support the delivery of the course we currently have access to the websites 'ActiveLearn' and 'drfrostmaths', these allow students to independently work through tutorials on all the topics as well as copious amounts of practice questions with complete solutions to assess themselves. There are weekly lunchtime support sessions with teachers.

### Field Work / Extension / Enrichment Opportunities

In the first term they are entered into the senior mathematics challenge, plus there is also the opportunity to take part in the team mathematics challenge, where they get to compete against other schools. Over the last few years during the summer term students have been taken to mathematics courses run at the University of Warwick to help provide insight beyond the curriculum. Students are also provided with support with their mathematics university entrance tests such as TMUA, MAT and STEP.

### Next Steps

A mathematics A level will provide a good foundation for mathematical related courses such as mathematics, economics, finance, engineering, and accounting. The A level also improves the students' ability to solve complex problems and communicate with logical reasoning which are skills looked on favourably by universities and employers.

For more information, contact Mr A Heighway on [a.heighway@nghs.org.uk](mailto:a.heighway@nghs.org.uk)