DRAYTON MANOR HIGH SCHOOL

# Success at Sixth Form – Subject Specific Tips

| **Subject** | Mathematics |
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## Class and homework expectations

You should bring the following items to each lesson:

- Homework from previous lesson
- Textbook
- Scientific Calculator
- Pens
- Ruler
- Pencil
- Paper/exercise book

Homework will generally be given every lesson with the expectation that at least 3 hours of private study each week should go towards this homework and general revision of all topics that have been covered. Topics will get assessed throughout the year through the homework and regular half termly assessments. You should aim to achieve your target grade or better on each assessment.

You are expected to arrive on time to all lessons and attend all lessons and any catch up lessons when possible.

## Scheme of Work

### Year 12

You will have a pure mathematics teacher who teaches you three times a week, a statistics teacher who teaches you for one hour a week and a mechanics teacher who also teaches for one hour a week.

The content of the year 1 course can be found by looking at the year 1 pure textbook and the year 1 applied textbook, both of which can be found at www.pearsonactivelearn.com.

You have your own login to access the textbooks.

### Year 13

Year 13 builds on the maths learnt in year 12 and has the same teaching structure.

The contents of the year 2 course can be found by looking at both the year 2 pure textbook and the year 2 applied textbook, both of which can be found at www.pearsonactivelearn.com.

## Overarching themes of the A-level course

### Mathematical argument, language and proof

- Construct and present mathematical arguments through appropriate use of diagrams; sketching graphs; logical deduction; precise statements involving correct use of symbols and connecting language.
- Comprehend and critique mathematical arguments, proofs and justifications of methods and formulae, including those relating to applications of mathematics.

### Mathematical problem solving

- Recognise the underlying mathematical structure in a situation and simplify and abstract appropriately to enable problems to be solved.
- Construct extended arguments to solve problems presented in an unstructured form, including problems in context.
- Interpret and communicate solutions in the context of the original problem.
- Evaluate the accuracy or limitations of solutions.
- Understand the concept of a mathematical problem-solving cycle.

### Mathematical modelling

- Translate a situation in context into a mathematical model, making simplifying assumptions.
- Use a mathematical model with suitable inputs to engage with and explore situations.
- Interpret the outputs of a mathematical model in the context of the original situation.
- Understand that a mathematical model can be refined by considering its outputs and simplifying assumptions; evaluate whether the model is appropriate.

## Assessment

You will be assessed in three exams at the end of the two-year course. Two of these exams assess pure content and the other assesses applied mathematics (see details below).

**Paper 1: Pure Mathematics 1 (*Paper code: 9MA0/01)**

**Paper 2: Pure Mathematics 2 (*Paper code: 9MA0/02)**

***Each paper is:***

***2-hour written examination***

***33.33% of the qualification***

***100 marks***

**Content overview**

- Topic 1 – Proof
- Topic 2 – Algebra and functions
- Topic 3 – Coordinate geometry in the $(x, y)$ plane
- Topic 4 – Sequences and series
- Topic 5 – Trigonometry
- Topic 6 – Exponentials and logarithms
- Topic 7 – Differentiation
- Topic 8 – Integration
- Topic 9 – Numerical methods
- Topic 10 – Vectors

**Paper 3: Statistics and Mechanics (*Paper code: 9MA0/03)**

***2-hour written examination***

***33.33% of the qualification***

***100 marks***

**Content overview**

**Section A: Statistics**

- Topic 1 – Statistical sampling
- Topic 2 – Data presentation and interpretation
- Topic 3 – Probability
- Topic 4 – Statistical distributions
- Topic 5 – Statistical hypothesis testing

**Section B: Mechanics**

- Topic 6 – Quantities and units in mechanics
- Topic 7 – Kinematics
- Topic 8 – Forces and Newton's laws
- Topic 9 – Moments

As well as the external exams, you will also be assessed half termly on both your pure and applied mathematics by your classroom teacher. You should prepare carefully for these assessments in order to have a complete understanding of the work covered and to be able to apply your knowledge to exam-style questions.

## How to do well in the subject at A Level

- Attend all lessons. If you are absent, catch up with work missed through Show My Homework or see your teacher.
- Keep your folders well-organised with all notes and solutions filed in the right place.
- Revise for all half-termly topic exams, endeavouring to achieve at least your target grade.
- Attempt exam-style questions and past papers regularly so that you can solve problems confidently, use your knowledge to construct chains of reasoning, and model situations mathematically.
- Practise answering questions in exam-style conditions in order to develop the skills necessary to be successful (e.g. identify key information in the question, link that information to similar questions you have seen before, and plan and complete answers in the time available).

## Support available

- The Mathematics Department offers catch up classes by invitation for those year 13 students who do not achieve their target grades in half-termly assessments and mock exams.
- Members of the Mathematics Department are always on hand for help by appointment.

## How parents can help support

- Please help your child to organise their folder and keep it up to date.
- Check they are doing homework
- Ask them to explain their reasoning so they can practise developing clear mathematical arguments.

## Helpful websites or resources

www.pearsonactivelearn.com

www.examsolutions.net

www.revisionmaths.com/advanced-level

www.s-cool.co.uk/a-level/maths

www.revisionworld.com/a2-level-level-revision/maths

www.schoolworkout.co.uk/a_level.htm

www.mathscentre.ac.uk

www.physicsandmathstutor.com