

A Level Maths
Year 12 Course Induction
Booklet 2026-2027



A- Level *Mathematics* Induction Booklet

Introduction:

Mathematics at A Level is considered a strong subject by all universities and enhances academic and employment prospects. Students studying A Level Mathematics will be able to:

- Develop their understanding of mathematics and mathematical processes in a way that promotes confidence and fosters enjoyment.
- Develop abilities to reason logically and recognise incorrect reasoning, to generalise and to construct mathematical proofs.
- Extend their range of mathematical skills and techniques and use them in more difficult, unstructured problems.
- Develop an understanding of coherence and progression in mathematics and of how different areas of mathematics can be connected.
- Recognise how a situation may be represented mathematically and understand the relationship between 'real-world' problems and standard and other mathematical models and how these can be refined and improved.
- Use mathematics as an effective means of communication.
- Read and comprehend mathematical arguments and articles concerning applications of mathematics.
- Acquire the skills needed to use technology such as calculators and computers effectively, recognise when such use may be inappropriate and be aware of limitations.
- Develop an awareness of the relevance of mathematics to other fields of study, to the world of work and to society in general.
- Take increasing responsibility for their own learning and the evaluation of their own mathematical development.

Mathematics is a great choice of subject for students who want a career in engineering, medical sciences, software design, architecture, teaching, finance, accounting, cosmology, planning and will help to develop logical thinking skills that will be useful in any field. Go to <http://www.futuremorph.org> for some interesting ideas of career pathways that follow from this qualification.

This booklet is designed to tell you key information that will help you towards achieving a good grade at A- Level *Mathematics*.

Lesson Structure

You will have 10 lessons every fortnight. These will be shared between both of your teachers. Initially, your teachers will teach Pure Mathematics 1 together but after February half- term your lessons will be divided between Mechanics 1 and Statistics 1.

Contact Details

Head of Department - Ms Atakan

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A Level Teachers

Mrs Asante

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Miss Emrith-Small

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Miss Maslowska (KS5 Maths- coordinator)

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Mr Murphy

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Miss Yeboah

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Mr Ziten

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Books

Students will follow the Edexcel Year 1/AS Mathematics books by Pearson for all of the modules (Pure Mathematics, Statistics and Mechanics). These books will be given to you at the start of the year. You will need to pay a £10 deposit before receiving your textbooks. This will be refunded once you return the books at the end of year 13.

Exam Board

Students will follow the Edexcel Mathematics AS/A Level course. (Course number 8MA0/9MA0)

Assessment

You will be completing informal and formal assessments during the whole academic year including the baseline test at the start of the year. UCAS grade will be the weighted average of all assessments and each assessment will count into your final UCAS grade with various weightings.

Assessment Objectives

The assessment will test students' ability to:

A Level AO1 Use and apply standard techniques Students should be able to:

- select and correctly carry out routine procedures; and
- accurately recall facts, terminology and definitions

AO2 Reason, interpret and communicate mathematically Students should be able to:

- construct rigorous mathematical arguments (including proofs)
- make deductions and inferences
- assess the validity of mathematical arguments
- explain their reasoning; and
- use mathematical language and notation correctly.

AO3 Solve problems within mathematics and in other contexts Students should be able to:

- translate problems in mathematical and non-mathematical contexts into mathematical processes
- interpret solutions to problems in their original context, and, where appropriate, evaluate their accuracy and limitations
- translate situations in context into mathematical models
- use mathematical models; and

- evaluate the outcomes of modelling in context, recognise the limitations of models and, where appropriate, explain how to refine them.

Requirements

All students will be expected to get to all lessons on time and complete all set homework by the given deadline. In addition to this, you will be expected to complete additional work in your own time. For every hour of work completed in class you should be completing a minimum of an hour of further work in your own time.

Classwork

Lesson time will focus on covering the key aspects of each topic along with a couple of worked examples. There may be some class time dedicated to working through exercises, but it is likely that you will have completed the exercises at home or in your own time.

Homework

Homework will be set by your subject teachers. It is expected that you complete all homework to the best of your ability and hand it in by the set date. When there is no formal homework set you should still be completing any exercises that you have started in class

Monitoring

Homework will be collected and marked. You will undertake regular assignments and tests throughout your class to monitor your progress. This progress will be discussed with you during lesson times and with your parents at parents evening.

Your target

We wish all of our students to achieve at their highest possible level. You will be set a target grade at the start of the year which will be based on your GCSE performance in conjunction with teacher assessment. We will expect all of our students to put every effort into achieving these targets and we in turn will make every effort to help you.

Google Classrooms / Microsoft Teams

You will be added to a group for your maths class. This will contain your homework, resources and important notices. This will also be another mean of communication between you and your teachers. Please check this regularly for important updates.

Digital PLCs

You will receive access to an online personal learning checklist. This will contain worksheets and videos to support your learning of the course. You are expected to use them regularly and check off topics you have revised.

Induction Task

During enrolment you will be given a task to complete BEFORE you are due to start the course. Please complete this to the best of your ability. There are websites below that can help you / clarify any of the topics.

Useful Websites

www.edexcel.com

www.physicsandmathstutor.com

www.mathsnet.net www.s-cool.co.uk

www.purplemath.com

<http://www.mathsrevision.net/alevel/>

Questions

If you have any questions or problems, please contact any of the teachers using the contact details given above.

Scheme of work- Year 1

		Pure and Mechanics		Pure and Statistics		
		Pure		Pure		
Autumn 1	Week 1	Baseline Assessment				
	Week 2 & 3	Chapter 1	Index Laws	Chapter 2	Solving quadratic equations	
			Expanding Brackets		Completing the square	
			Factorising		Functions	
			Negative and fractional indices		Quadratic Graphs	
			Surds		The discriminant	
	Week 3	Chapter 3	Rationalising denominators	Chapter 4	Modelling with quadratics	
			Linear Simultaneous Equations		Cubic Graphs	
			Quadratic Simultaneous equations		Quartic Graphs	
	Week 3	Chapter 3	Simultaneous equations on graphs	Chapter 4	Reciprocal graphs	
					Points of intersection	
	Week 4	September Assessment				
	Week 5	Chapter 3	Linear Inequalities	Chapter 4	Translating graphs	
			Quadratic Inequalities			
Week 6&7	Chapter 5	Inequalities on graphs	Chapter 7	Stretching Graphs		
		$y=mx+c$		Transforming Functions		
Week 8	Chapter 5	Equations of straight lines	Chapter 7	Algebraic fractions		
		Parallel and Perpendicular Lines		Dividing Polynomials		
Week 8	Chapter 5	Length and Area	Chapter 7	Factor Theorem		
		Modelling with straight lines		Proof		
Week 9	Chapter 5	Midpoints and Perpendicular Bisectors	Chapter 7	Methods of Proof		

Spring 1	Week 10		Equation of a circle	Chapter 8	Pascal's Triangle
			Intersection of straight lines and circles		Binomial expansion
			Use tangent and chord properties		Solving binomial problems
	Week 11 & 12	Chapter 9	Circles and triangles	Chapter 12	Binomial Estimation
			Cosine Rule		Gradient of Curves
			Sine Rule		Finding the Derivative
			Area of Triangles		Differentiating x^n
			Solving Triangle Problems		Differentiating Quadratics
			Graphs of sine, cosine and tangent		Differentiating functions with 2 or more terms
	Week 13&14	Chapter 10	Transforming Trigonometric Graphs		Gradients, Tangents and normals
			Angles in all four quadrants		
			Exact values of trigonometrical ratios		
Simple Trigonometric Equations					
Revision and January Mocks					
Week 1					
Week 2					
Week 3	Chapter 11	Vectors	Chapter 12	increasing and decreasing functions	
		Representing Vectors		Second order derivatives	
Week 4		Magnitude and direction		Stationary Points	
		Position Vectors		Sketching gradient functions	
		Solving geometric problems		Modelling with differentiation	
Week 5	Chapter 14	Modelling with Vectors	Chapter 13	Integrating x^n	
		Exponential functions		Indefinite integrals	
		$y=e^x$		Finding functions	
Week 6		Exponential modelling		Definite Integrals	
		Logarithms		Area under curves	
		Laws of Logarithms		Area under x axis	
		Solving Equations using logarithms		Area between curves and lines	
Week 6		Working with Natural Logarithms			
		Logarithms and non-linear data			

		Mechanics		Statistics		
Spring 2	Week 7	Chapter 8	Overview and Assumptions (8A,B,C)	Chapter 1	Population and samples	
			Scalars to Vectors (8D)		Types of sampling	
	Modelling with Vectors (8D)	Types of data				
	Week 8	Chapter 9	Displacement and Velocity (9A, 9B)		Large data set	
			SUVAT 1 (9C)		Measures of location and spread	
	Week 9		SUVAT 2 (9D)		Mean	
Vertical Motion under Gravity (9E)			Median			
Week 10		Force Diagrams (10A)	Quartiles, deciles, percentiles, IQR, IPR			
		Forces as Vectors (10B)	Variance and Standard deviation			
Week 11	Chapter 10	Forces and Acceleration (10C/10D)	Coding			
Week 12		Connected Particles (10E)	Box plots/Cumulative frequency			
		Pulleys (10F)	Histograms			
			Frequency Polygons			
Revision and Summer Mocks						
Summer 1	Week 4	Chapter 11	Intro and Differentiation (11A/B)	Chapter 4	Correlation	
			Maxima and Minima Problems (11C)		Regression Lines	
	Week 5		Using Integration (11D)	Chapter 5	Interpolation & extrapolation	
			Constant Acceleration Formulae (11E)		Basic probability & Venn Diagrams	
	Week 6	Revision on key topics emerging from mocks		Chapter 6	Mutually exclusive and independent events	
Week 7	Tree Diagrams					
	Simple Probability Distributions					
Summer 2	Week 1			Chapter 7	Binomial Distributions /Binomial PD on Calculator (6B)	
					Week 2	Cumulative Probabilities/Binomial CD on Calculator (6C)
	Week 3	Stats and Mechanics Assessment				Hypothesis Testing (7A)
		Week 4	Proof			Partial Fractions
	Week 5					Finding Critical Values (7B)
					Full One-Tail Tests (7C)	
					Full Two-Tail Tests (7D)	

Learning Contract

Things your teacher will do:

- Prepare lessons fully
- Mark your work within 10 school days
- Be honest with you
- Meet when we agree
- Give you constructive feedback and targets for improvement with each assignment
- Deliver all the necessary parts of the syllabus
- Prepare for the exams with past papers, mark schemes and mocks
- Put on additional study support
- Treat you as an individual and the maturing young adult that you are
- Give additional support and help with the course if needed.

Things your teacher will not do:

- Do all your work for you
- Talk all lesson. You must take an active role in your lessons.
- Take responsibility for your shortcomings
- Chase you up all the time, you are responsible for your learning

Things you, as the student, will do:

- Attend all lessons; we expect 100% attendance. If you cannot attend, you must email to explain your absence.
- Be punctual to all lessons; if you are late without good reason, you will receive behaviour points. If this is not possible due to emergency, contact your teacher ASAP
- Always wear correct uniform to all lessons.
- Always treat class members with respect, including teachers.
- Meet all homework deadlines, if this is not possible then make sure that you speak to your teacher before it is due.
- Read around the subject and take an active interest in the subject.
- Always behave like a mature young adult.
- Undertake additional maths work outside of normal homework assignments and lessons. Students who do this will achieve, those who don't will not.

If this agreement is broken consequences may include: 1. Individual interview with teacher and/or Head of Department 2. Letter or phone call home 3. A request for your parent(s) to meet with the Head of Department regarding your place on the course 4. A recommendation to the Head Teacher that you are removed from the course

Signed: _____ (Teacher)

Signed: _____ (Student)