

EASTBROOK SCHOOL



MATHS DEPARTMENT

A-LEVEL



A-Level mathematics at Eastbrook

At Eastbrook School, we are offering a new A-level mathematics course consisting of three main areas: Pure mathematics, Mechanics and Statistics, taught over 2 years. The exam board for the course is Edexcel and the assessment will consist of a final exam at the end of the second year, broken down into the following three papers;

Paper 1: Pure Mathematics 33% 2 hours 100 marks	Any pure content can be assessed on either paper
Paper 2: Pure mathematics 33% 2 hours, 100 marks	
Paper 3: Statistics and Mechanics 33% 2 hours 100 marks	Section A: Statistics (50 marks) Section B: Mechanics (50 marks)

Course content:

Year 1 Pure content	Year 1 Statistics content	Year 1 Mechanics content	Year 2 Pure content	Year 2 Mechanics	Year 2 Statistics
Algebra and functions	Statistical sampling	Quantities and SI units	Proof	Moments	Regression and correlation
Coordinate geometry	Data presentation and interpretation	Kinematics (constant acceleration)	Algebraic and partial fractions	Forces at any angle	probability
Further algebra	Probability	Forces & Newton's Laws	Functions and modelling	Application of kinematics	The Normal Distribution
Trigonometry	Statistical distribution	Kinematics 2 (variable acceleration)	Series and sequences	Application of forces	
Vectors 2D	Statistical hypothesis		The binomial expansion	Further kinematics	
Vectors 2D			Trigonometry		
Integration			Parametric equations		
Exponential and Logarithms			Differentiation		
			Numerical methods		
			Integration 1 & 2		
			Vectors 3D		
120 hours of classroom lessons	30 hours of classroom lessons	30 hours of classroom lessons	120 hours of classroom lessons	30 hours of classroom lessons	30 hours of classroom lessons

How to apply:

Since studying maths at A-level is demanding, we, at Eastbrook, do require a prerequisite grade 6 at GCSE maths. Students who wish to apply to this course will have an enrichment CGP revision book to help revise prior knowledge topics over the summer holidays. All fresh applicants will sit for a baseline test that assesses this prior knowledge.

Although Mathematics is a course that requires higher levels of work and commitment, it is also one of the most rewarding A-level courses to complete due to the vast of career paths made possible through completion; whether it be going to university to study the hard sciences or moving toward a career in the financial world. The demand for high levels of ability in maths is ever increasing in the professional climate.

More specifically, careers in the following areas absolutely require a mathematical qualification to at least an A-level standard; Actuary, Accountancy, Engineering, Computer science, Medicine and Dentistry, Defence companies, Astronomy, Physics, Chemistry, Biology, Neurology, Insurance etc. Put simply; completing a maths A-level opens more doors than it closes.

Why Study Mathematics at Eastbrook?

We have rich resources, excellent interactive e-books ready for all students. All lesson resources are shared with students on one-drive, which enable them to access course materials before and after lessons.



Student support

We have set times for intervention to help struggling students and also to stretch and challenge our most able and talented students. An hour after-school session with focus on practising problem solving and modelling questions (new specification). Three hours teacher-student interaction in practising exam style questions every Saturdays. We do encourage independent learning and students at any point in time can contact teachers for support.

Extra curricula activities

At Eastbrook we offer placement for students who wish to volunteer to mentor or tutor year 11 pupils. Some can also volunteer to teach early year groups in primary. This experience is good for students CVs and provides good UCAS score towards higher education.

Peer support in the maths classroom and beyond

How students support each other and form a community with each other. We encourage them to do more independent revision and explain more to each other to help them with their understanding further.



Revision Pack for Baseline Test (A level Maths)

1.

Simplify these expressions.

a $\frac{x^6 \times x^2}{x^5}$ (1 mark)

b $(3x^4)^2$ (1 mark)

c $\frac{4x^{\frac{1}{3}}}{(16x^{-3})^{\frac{3}{4}}}$ (3 marks)

2.

Solve $2x^3 \times 3x^2 = 6144$ (2 marks)

3.

a Write $\sqrt{448}$ in the form $a\sqrt{7}$, where a is an integer. (1 mark)

b Expand and simplify $(3 - \sqrt{5})(2 + 3\sqrt{5})$. (2 marks)

c Simplify $\frac{4 - 2\sqrt{3}}{5 + \sqrt{3}}$ giving your answer in the form $a + b\sqrt{c}$, where a , b and c are rational numbers. (3 marks)

4.

The area of a triangle is given as $(16 + 4\sqrt{5}) \text{ cm}^2$.

The base of the triangle is $(7 - \sqrt{5}) \text{ cm}$, and the perpendicular height is $(p + q\sqrt{5}) \text{ cm}$.

Find the values of p and q . (4 marks)

5.

Expand and simplify these expressions.

a $4(2x + 3y)$ (1 mark)

b $(3x - 1)(4x + 3)$ (2 marks)

c $(x + 1)^2(x - 3)$ (3 marks)

6.

Fully factorise these expressions.

a $3x - 12xy$ (1 mark)

b $x^2 - 5x + 6$ (1 mark)

7.

Solve these equations.

a $2x + 15 = 7$ (1 mark)

b $x^2 - 11x + 10 = 0$ (2 marks)

c $3x^2 - 7x + 3 = 0$ (2 marks)

8.

Solve these pairs of simultaneous equations.

a $3x + y = 2$ (3 marks)
 $4x - y = -9$

b $y = 4x + 3$ (3 marks)
 $2y = 2x + 3$

c $x - y = 1$ (4 marks)
 $x^2 + y^2 = 13$

9.

Solve these inequalities.

a $3x + 5 \leq 12$ (1 mark)

b $4x - 3 > 9x - 7$ (2 marks)

c $x^2 + x - 56 \leq 0$ (2 marks)