

Mathematics and Further Maths



1)	$(ab)^2 =$
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2)	$\left(\frac{a}{b}\right)^2 =$
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3)	$\left(\frac{a}{b}\right)^{-1} =$
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4)	$(a + b)^2 =$
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5)	$\frac{a}{b} \times c =$
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6)	$a \div b =$
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7)	$\frac{1}{b} \times c =$
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8)	$a \times \frac{b}{c} =$
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9)	$\frac{a}{b} \div c =$
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10)	$a \div \frac{b}{c} =$
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11)	$\frac{a}{b} \times \frac{c}{d} =$
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12)	$\frac{a}{b} \div \frac{c}{d} =$
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13)	$\frac{a}{b} + \frac{c}{b} =$
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14)	$\frac{a}{b} - \frac{c}{b} =$
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15)	$\frac{a}{b} + \frac{a}{c} =$
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16)	$\frac{a}{b} + \frac{c}{d} =$
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17)	$\frac{a}{b} - \frac{c}{d} =$
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18)	$a + \frac{b}{c} =$
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19)	$a - \frac{b}{c} =$
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20)	$-(a-b) =$
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Are your
algebra
skills up
to
scratch?



Structure of the new A-Level Maths

The course builds on the work already studied at Higher Tier GCSE and will be a mix of the following:

- Pure Mathematics
- Mechanics
- Statistics

Entry requirements : GCSE Higher grade 6 or above although grade 7 or above is highly recommended.

What is covered in A level Mathematics?



All of the content in the A level Mathematics qualification is compulsory and is the same for all examination boards.

Pure Mathematics (66%)
methods and techniques which underpin the study of all other areas of mathematics, such as, proof, algebra, trigonometry, calculus, and vectors.

Statistics (17%)
statistical sampling, data presentation and probability leading to the study of statistical distributions

Mechanics (17%)
the study of the physical world, modelling the motion of objects and the forces acting on them.

What is Further Mathematics?



- ▶ Mathematics and Further Mathematics can both be taken at A level.
- ▶ Further Mathematics is an A level qualification taken alongside an A level mathematics course.
- ▶ It is designed to stretch and challenge able mathematicians and prepare them for university courses in mathematics and related quantitative and scientific subjects.

Structure of the new A-Level Further Maths



Course content for the Further Mathematics A level:

- Further Pure Mathematics
- Further Statistics
- Further Mechanics:

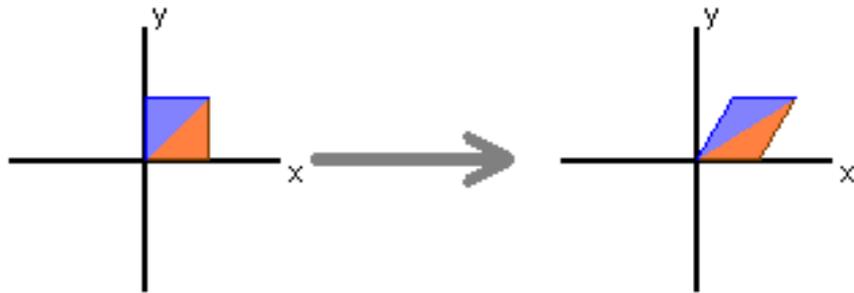
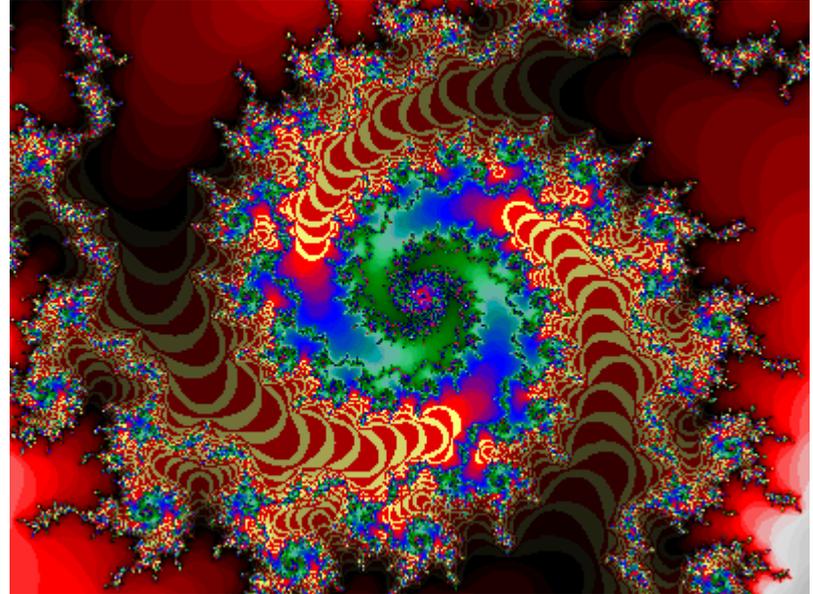
Entry requirements : GCSE Higher grade 7 or above

What pure maths is covered in Further Mathematics?



Two examples of important Further pure topics are complex numbers and matrices.

Matrices are arrays of numbers such as $\begin{pmatrix} 1 & 0 \\ 0 & 2 \end{pmatrix}$. They can be used to solve sets of simultaneous equations and to represent transformations such as the shear shown in the diagram below.



Complex numbers are based on the 'imaginary' number $\sqrt{-1}$. They lead to the study of lots of new areas of mathematics, including fractals like those shown in the image above.

Course requirements



- ▶ Students will be asked to purchase a textbook.
- ▶ Due to the new “Use of Technology” element to the course, students are also required to purchase a new calculator.

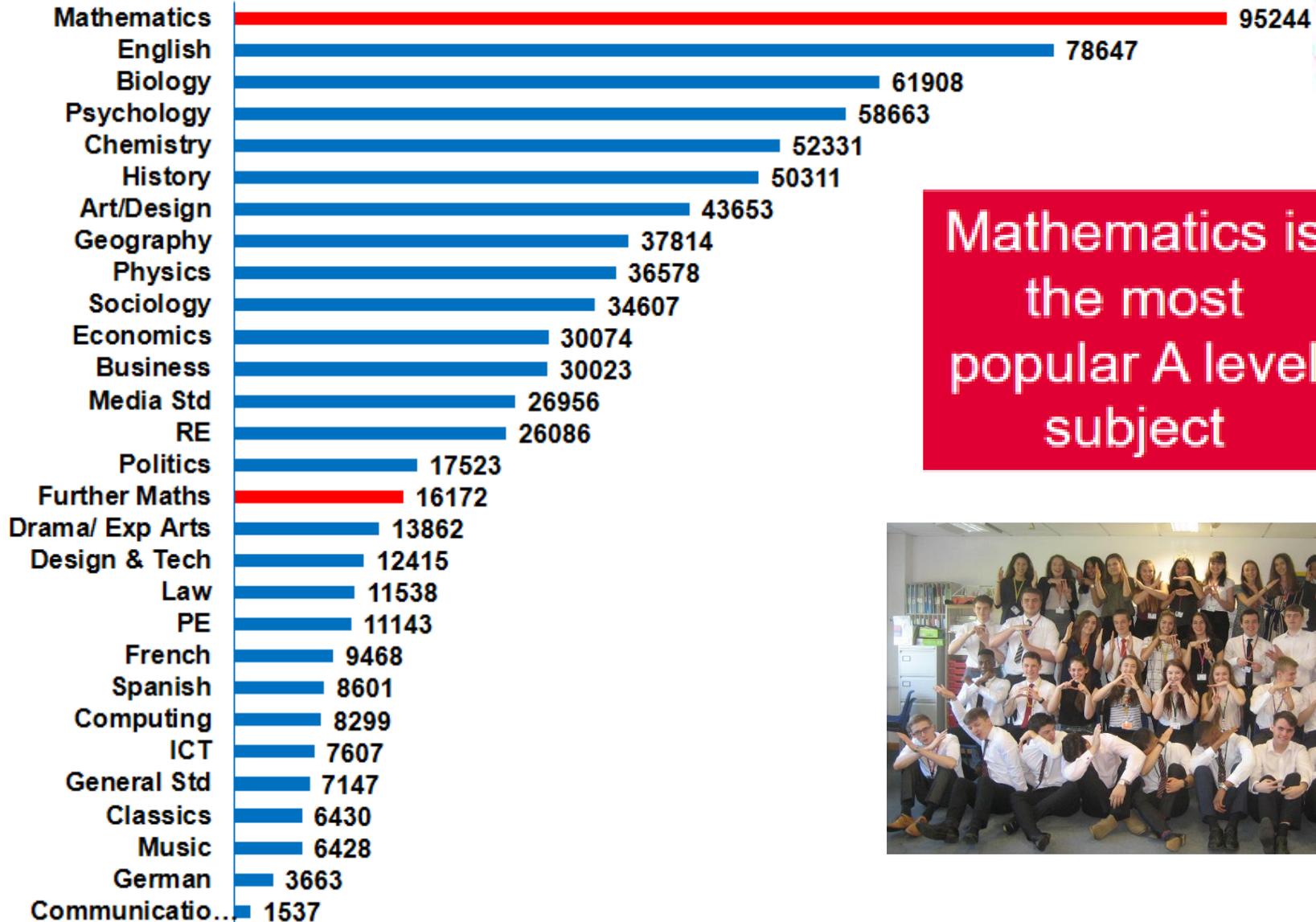
Why study Mathematics A levels?

Studying Mathematics and Further Mathematics will:

- ▶ provide a stimulating and challenging course;
- ▶ develop key employability skills such as problem-solving, logical reasoning, communication and resilience;
- ▶ increase knowledge and understanding of mathematical techniques and their applications;
- ▶ support the study of other A level subjects;
- ▶ provide excellent preparation for a wide range of university courses;
- ▶ lead to a versatile qualification that is well-respected by employers and higher education.



2017 A level entries by subject



Mathematics is
the most
popular A level
subject



Other sources of information

- ▶ The mathematics teachers at your school
- ▶ FMSP website www.furthermaths.org.uk
- ▶ Maths Careers website www.mathscareers.org.uk
- ▶ Future Morph careers website www.futuremorph.org
- ▶ Universities and Colleges Admissions Service (UCAS) www.ucas.com
- ▶ Best course 4 me www.bestcourse4me.com
- ▶ Tomorrow's Engineers www.tomorrowsengineers.org.uk
- ▶ The Institute of Physics (IOP) www.iop.org