

A – Level Maths – Year 12

Course guide and expectations



Key Information:

Exam Board : Edexcel

Specification link: [A level Mathematics \(pearson.com\)](https://www.pearson.com)

Exam Papers (end of Y13) : Paper 1 (pure), Paper 2 (pure), Paper 3 (Statistics and Mechanics). All papers are 2 hours and all papers are out of 100 Marks.

Recent Grade boundaries are below:

Exam Series	Max Mark	A*	A	B	C	D	E
June 2024	300	251	205	167	130	93	56
June 2023	300	244	196	158	121	84	47
June 2022	300	217	164	130	96	62	28
November 2021	300	207	157	128	99	70	42
November 2020	300	214	162	130	99	68	37
June 2019	300	217	165	134	103	73	43
June 2018	300	229	184	155	126	98	47

A level maths can be the most amazing subject or the most lonely and daunting. if you put in the time and graft at it, the course will be enjoyable and a success, if you don't then you are liable to struggle and quickly fall behind. For every 1 hour you do in class, you really need to do 1 hour of independent work. This could be completing extra exercises in the textbook, completing questions on uplearn or on Dr frost. It might have been easy to wing GCSE maths if you were naturally gifted, but this doesn't get you far when it comes to A level maths. potential means little at a level, it's the hard workers that prevail and those who don't buy their head in the sand. Don't be the student who got a grade 8 or 9 at GCSE who gets a grade D or E at a level because you thought you could 'revise' in April of year 13. You don't have to be the best; you just have to be the best worker you can be. Please read this booklet carefully as it tells you everything you need to know and do to succeed.

Organisation

You must have a Day Folder which you bring to every lesson and a Lever Arch Folder that will be kept at home. If you work online (e.g. iPad please speak to Mrs Streater regarding your folder set up.)

Day Folder (school)	Subject Folder (home)
Popped Pocket for recent sheets / homework / assessments / feedback sheets.	Dividers for Each Unit
Teacher 1 and Teacher 2 Exercise Books	Booklets organised into each unit.
Teacher 1 and Teacher 2 Current Booklet	Worksheets and assessments organised into each unit.
Formula Book	Completed Exam Practice Papers and revision

Calendar

This Calendar is a rough guide – things may change slightly but you should stay within this order. Use the calendar to use uplearn to pre-learn some topics, or ensure that you have the prior knowledge needed to succeed.

0	Teacher 1 - P and M		Teacher 2 - P and S		Notes
	Lesson 1	Lesson 2	Lesson 1	Lesson 2	
Mon 1 st Sept	Induction		Induction		
Mon 8 th Sept	Solving Quadratics L1	Solving quadratics L2	Expanding, Factorising	Surds	Year 12 Induction Eve
Mon 15 th Sept	Solving quadratics L3	Simultaneous equations L1	Exponentials L1	Exponentials L2	
Mon 22 nd Sept	Simultaneous equations L2	In class Test 1	Exponentials L3	In class test 1	
Mon 29 th Sept	Inequalities L1	Inequalities L2	Algebraic Division	Factor Theorem	
Mon 6 th Oct	Sketching Graphs	Transforming functions	Proof L1	Proof L2	
Mon 13 th Oct	Functions	WTM - Quadratics, Tanformations of Graphs, Functions,	Binomial Expansion L1	Binomial Expansion L2	
Half Term (2 weeks)					
Mon 3 rd Nov	Functions	Velocity Time graphs	Binomial Expansion L3	In class test 2	
Mon 10 th Nov	Velocity time graphs	Co ordinate geometry L1	Probability Distributions L1	Probability Distributions L2	
Mon 17 th Nov	Co-ordinate geometry L2	Co ordinate geometry L3	Probability Distributions L3	Probability Distributions L4	
Mon 24 th Nov	Co ordinate geometry L4	Co ordinate geometry L5	Probability Distributions L5	Probability Distributions L6	
Mon 1 st Dec	Co ordinate geometry L6	In class test 3	In class test	Differentiation L1	
Mon 8 th Dec	Kinematics L1	Kinematics L2	Differentiation L2	Differentiation L3	
Mon 15 th Dec	Kinematics L3	Kinematics L4	Differentiation L4	Differentiation L5	
Christmas					
Mon 5 th Jan 2026	MYE	Vectors L1	Differentiation L6	MYE	
Mon 12 th Jan	Vectors L2	Vectors L3	Trigonometry L1	Trigonometry L2	
Mon 19 th Jan	Forces L1	Forces L2	Trigonometry L3	Trigonometry L4	Parents Evening
Mon 26 th Jan	Forces L3	Forces L4	Trigonometry L5	Trigonometry L6	
Mon 2 nd Feb	Forces L5	Forces L6	Trigonometry L7	Trigonometry L8	
Mon 9 th Feb	In class test	Forces L7	Trigonometry L9		
Half Term					
Mon 23 rd Feb	Integration L1	Integration L2	Statistical Measures L1	Statistical Measures L2	
Mon 2 nd Mar	Integration L3	Feedback MYE	Statistical Measures L3	Feedback MYE	
Mon 9 th Mar	Integration L4	Integration L5	Coding L1	Presenting Data L1	
Mon 16 th Mar	Kinematics 2 L1	Kinematics 2 L2	Presenting Data L2	Presenting Data L3	
Mon 23 rd Mar	Kinematics 2 L3	In class test	Correlation and PMCC	In class test	
Easter (2 weeks)					
Mon 13 th Apr	Exponential and Logs L1	Exponential and Logs L2	Hypothesis testing L1	Hypothesis Testing L2	
Mon 20 th Apr	Exponential and Logs L3	Functions 2 L1	Hypothesis Testing L3	Hypothesis Testing L4	
Mon 27 th Apr	Functions 2 L2	Functions 2 L3	Hypothesis Testing L5	Hypothesis Testing L6	
Mon 4 th May	Functions 2 L4	Functions 2 L5	Year 1 Content overview		
Mon 11 th May	Moments	Moments	Year 1 Content overview		
Mon 18 th May	Moments	Moments	Algebraic Fractions L1	Algebraic Fractions L2	
Half Term					
Mon 1 st June	Sequences and Series L1	Sequences and series L2	Partial Fractions L1	Partial Fractions L2	
Mon 8 th June	Revision		Revision		
Mon 15 th June	EOY Exams				
Mon 22 nd June					
Mon 29 th June					
Mon 6 th July	Sequences and Series L3	Go through EOY exam	Partial Fractions L3	Partial Fractions L4	
Mon 13 th July	Sequences and Series L5	Sequences and series L6	Go through EOY Exam	Partial Fractions L5	PPG for UCAS predictions and reports

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Mon 1 st Sept	Induction			Induction		
Mon 8 th Sept	Differentiation L1	Differentiation L2		Trig L1	Trig L2	
Mon 15 th Sept	Differentiation L3	Differentiation L4		Trig L3	Trig L4	
Mon 22 nd Sept	Differentiation L5	Differentiation L6		Trig L5	Trig L6	
Mon 29 th Sept	Differentiation L7	Differentiation L8		Trig L7	Trig L8	
Mon 6 th Oct	Differentiation L9	Integration L1		Trig L9	Trig L10	
Mon 13 th Oct	Integration L2	Assessment 1		Trig L10	Assessment 1	
Half Term (2 weeks)						
Mon 3 rd Nov	Integration L3	Integration L4		Binomial Series	Binomial Series	
Mon 10 th Nov	Integration L5	Integration L6		Binomial Series	Binomial Series	
Mon 17 th Nov	Integration L7	Differential Equations L1		Binomial Series	Parametrics L1	Parents Evening
Mon 24 th Nov	Differential Equations L2	Differential Equations L3		Parametrics L2	Parametrics L3	
Mon 1 st Dec	Differential Equations L4	Vectors L1		Parametrics L4	Parametrics L5	
Mon 8 th Dec	Vectors L2	Vectors L3		Parametrics L6	Proof by contradiction	
Mon 15 th Dec	Forces L1	In class test		Numerical Methods L1	In class test	
Christmas						
Mon 5 th Jan 2026	Forces L2	Forces L3		Numerical Methods L2	Numerical methods L3	Y13 Parents Evening
Mon 12 th Jan	Forces L4	Statics L1		PMCC	Regression and Correlation	
Mon 19 th Jan	Statics L2	Statics L3		Hypothesis tests	Hypothesis tests	
Mon 26 th Jan	Connected particles L1	Connected Particles L2		Hypothesis tests	Hypothesis tests	
Mon 2 nd Feb	Connected Particles L3	Connected Particles L4		Revision for Ass 2		
Mon 9 th Feb	Assessment 2			Assessment 2		
Half Term						
Mon 23 rd Feb	Assessment 2			Assessment 2		
Mon 2 nd Mar	Variable Acceleration 2 L1	Variable Acceleration 2 L2		Normal Distribution L1	Normal Distribution L2	
Mon 9 th Mar	Variable Acceleration 2 L3	Variable Acceleration 2 L4		Normal Distribution L3	Normal Distribution L4	
Mon 16 th Mar	Projectiles L1	Projectiles L2		Normal Distribution L5	Normal Distribution L6	
Mon 23 rd Mar	Projectiles L3	Projectiles L4		Normal Distribution L7	Normal Distribution L8	Ass 2 Grades due in
Easter (2 weeks)						
Mon 21 st Apr	Revision			Revision		
Mon 28 th Apr						
Mon 5 th May						
Mon 12 th May	Exams Start					

A-Level Maths Super Curricular 2025

Super curriculars are activities/courses/reading that you complete outside of your lessons but that are linked to your courses.

This is different to extracurricular activities which are things that you do outside of school eg A PT job, volunteering or a sport/hobby that aren't linked to your studies. Universities generally see super curricular as more important than extracurricular.

Super curricular activities are usually things such as:

Wider Reading	Visits to places linked to your course.	Reading academic journals	Reading magazines
Work experience in your field.	MOOCs	Podcasts/Videos	Entering Competitions

I have put some ideas and support below of things that you could do to support your UCAS application over the summer Holidays.

Wider Reading- Books

The best way to look for wider reading is to look at your chosen/wanted university's reading list for your subject and see what may interest you from here. In Maths we have our own library which any student may borrow from at any time – just come and find me! Some of the books that we currently have are:

1. Hello World – Hannah Fry
2. Beyond Infinity – Eugenia Cheng
3. Why do buses come in threes? – Rob Eastaway and Jeremy Wyndham
4. Alex's adventures in numberland – Alex Bellos
5. What is mathematics? – Richard Courant
6. Eulers Pioneering Equation – Robin Wilson
7. Things to Make and do in the fourth dimension – Matt Parker
8. Infinite Powers – Steven Strogatz
9. Professor Stwards Cabinet of Mathematical Curiosities
10. The joy of X – Stever Strogatz
11. Alex through the looking glass – Aex bellos
12. Chaos: the amazing science of the unpredictable – James Gleick
13. Humble Pi – Matt Parker
14. In Search of Schrodingers Car – John Gribbin
15. The Simpsons and Their Mathematical Secrets – Simon Singh
16. The Music of primes – Marcus Du Sautoy
17. The great mathematical problems – Ian Stewart
18. 17 Equations that changes the world – Ian Stewart

Journals/ Magazines

Plus Magazine [Welcome to Plus! | plus.maths.org](http://plus.maths.org)

New Scientist [New Scientist | Science news, articles, and features](#)

Podcasts/Videos:

If you struggle with reading books then you could watch this video review about the book “Fermat’s Last Theorem” by Simon Singh. [Fermat's Last Theorem - Book Review - YouTube](#)

The London Mathematics Society Youtube channel is interesting: [London Mathematical Society - YouTube](#)

Numberphile – some interesting videos here too [Numberphile](#)

Maths at Cambridge- some things here are a little old but still interesting: [Mathematics Mock Interview, University of Cambridge](#)

TED Talks: Maths to blow your mind [Math talks to blow your mind | TED Talks](#)

Oxford University Podcast: [The Secrets of Mathematics | University of Oxford Podcasts](#)

Lectures

Many places do free maths lectures to watch:

Gresham College: [Watch Now | Gresham College](#)

Oxford Lectures: [Oxford Mathematics Public Lectures and Events | Mathematical Institute](#)

Websites

If you are looking to go into engineering then this is a good website: [Engineering.com](#)

Step support Programme: [Welcome | STEP Support Programme](#)

MOOCs

Some excellent places offer free online courses such as:

Harvard: [Free Courses | Harvard University](#)

York University: [Free online courses - Free online courses, University of York](#)

University of London: [MOOCs - free taster courses - Free taster courses | University of London](#)

Imperial: [mA*ths Online Programme | Be inspired | Imperial College London](#) (Apply in September for this)







EdX – lots of different places here [edX | Online Courses, Certificates & Degrees from Leading Institutions](#)







My-Mooc.com [Learn with MOOCs about Mathematics | Free Online Courses | My Mooc](#)

A – Level Maths 2025 - Wider Reading







Wider Reading







To fully succeed in Maths, you need to learn about maths outside of the A-Level course too! There are some books in Room 12A that you may borrow (please ask Mrs Streater when doing this) and below is the wider reading for this academic year – this will also be a good thing to write about in your personal statements.

9 th Sept	<p>We see the numbers “million” and “billion” a lot, both in maths and in everyday life, but it can be difficult to visualise their relative sizes. In this week’s video, Tom Scott demonstrates the difference between a million dollars and a billion dollars.</p> <p>You may want to watch the first 2-3 minutes then skip ahead to a couple of minutes from the end, as there is a lot of driving in the middle!</p> <p>https://www.youtube.com/watch?v=8YUWDrLazCg</p>	
16 th Sept	<p>Fermat’s Last Theorem is one of the most well-known theorems in mathematics. It was first stated by Pierre de Fermat in 1637 but was not proven until 1994 by English mathematician Andrew Wiles, who has studied and worked at Oxford, Cambridge and Princeton.</p> <p>In this week’s video Simon Singh introduces the theorem, and explains a little of the history of how it was finally proven. Singh has written a number of popular science and mathematics book that you may want to read!</p> <p>https://www.youtube.com/watch?v=qjNcEguuFSA</p>	
23 rd Sept	<p>The theory of surfaces (sometimes called two-dimensional manifolds) is part of an area of mathematics called topology. Students generally first encounter topology at university as part of a mathematics degree.</p> <p>In this week’s video, Matt Parker explores the question of how many ‘holes’ a surface can have, mathematically speaking. The answer may not be as simple as you first think!</p> <p>https://www.youtube.com/watch?v=ymF1bp-qrjU</p>	
30 th Sept	<p>The Prisoner’s Dilemma is a classic problem in an area of mathematics called Game Theory. Further Maths students will study a section of Game Theory known as “zero sum games” as part of their course; however, Game Theory is a wide-reaching field which has applications in subjects as diverse as Economics, Marketing, Psychology and Computer Science.</p> <p>This week’s video outlines the key points of the Prisoner’s Dilemma problem and considers its potential solutions.</p> <p>https://www.youtube.com/watch?v=t9Lo2fgxWHw</p>	
7 th Oct	<p>This week’s video is a particularly interesting one because it spans two very different areas of mathematics. Steve Mould considers a system of two springs, and asks what would happen if the rope between them were cut. He then applies the somewhat counterintuitive and unexpected result to the question of speeding up the flow of traffic through a road network. This is a topic that is studied by our Further Maths students in the Discrete maths topic of Network Flows. https://www.youtube.com/watch?v=Cg73j3QYRjC</p>	
14 th Oct	<p>This week’s link is actually a series of podcasts by +Plus Magazine, which is a maths website run by the University of Cambridge. The podcasts cover a wide range of mathematical topics, such as modelling climate change, making predictions during the COVID-19 pandemic, the dynamics of crowds and the maths of card shuffling.</p> <p>You can stream the podcasts straight from the website, or download them onto a phone or device to listen to later. Some of these podcasts may provide you with a starting point for further reading, if you are looking for topics to discuss in a UCAS personal statement or university interview. Why not choose a few that interest you to listen to over the half term break?</p> <p>https://plus.maths.org/content/Podcast</p>	

4 th Nov	<p>You may have heard of or seen some examples of fractals before. If not, it is well worth going on Google images and searching “fractals” before you watch this video to get a feel for the beautiful and intriguing patterns that can be created. This week’s video is an introduction to fractals, or “self similar” shapes, in particular the Sierpinski triangle and the Koch snowflake curve. In future weeks we’ll be sharing further videos on other types of fractal such as the Mandelbrot set and the Dragon curve. https://www.youtube.com/watch?v=XwWyTts06tU</p>	
11 th Nov	<p>Following on from last week’s introduction to fractals, this week is all about the Mandelbrot set. If you’ve not seen it before, you might like to Google “Mandelbrot set” and look at some images before you watch the video to see the amazing patterns it creates. The Mandelbrot set is a fractal pattern made by complex numbers. Further maths students will already be familiar with complex numbers but don’t worry if you don’t fully understand the complex numbers part; it’s possible to enjoy the Mandelbrot set as a beautiful design without getting too bogged down in the mathematical detail! https://www.youtube.com/watch?v=NGMRB4O922I</p>	
18 th Nov	<p>Howie Hua is a Maths instructor at Fresno State University in California. He makes a series of TikTok videos demonstrating mathematical concepts in different visual and intuitive ways. I particularly like his demonstration of the infinite sum $1/3 + 1/9 + 1/27 + 1/81 + \dots$ in a way that is really easy to understand. This is a collection of some of his TikTok videos, on YouTube. https://www.youtube.com/watch?v=59g9BuHISxg</p>	
25 th Nov	<p>This video looks at a scenario called the brachistochrone problem, which poses the question of how to get from one point in space to another in the shortest amount of time. This mathematical question has clear applications in Physics and Engineering. The brachistochrone problem is one that most mathematics undergraduates first encounter at university, so some of the maths involved in the solution gets a bit heavy towards the end of the video – try not to get bogged down by the details; a general understanding of the solution can be gained without following every step! https://www.youtube.com/watch?v=Cld0p3a43fU</p>	
2 nd Dec	<p>At this time of year, many people like to get into the Christmas spirit by doing a Secret Santa, where everyone picks a name out of a hat and buys a present for that person. In this week’s video, Hannah Fry considers the mathematical implications of this, some problems it causes and finds a suitable mathematical solution. https://www.youtube.com/watch?v=5kC5k5QBqcc</p>	
9 th Dec	<p>Most people have heard of Florence Nightingale, a nurse famous for her work in military hospitals in the Crimean War (1853-1856) However, she was also a statistician and social reformer who pioneered the use of statistics and analysis of data in the field of medicine. She developed several types of statistical diagrams to represent the data she collected, and used these to improve healthcare and patient outcomes. In this week’s video, Professor Mike Merrifield discusses this, and the benefits of displaying data in a circular diagram rather than in an x-y plane. The video was recorded in spring 2021 so the Covid data used is from that period. https://www.youtube.com/watch?v=VTdVPNvwULM</p>	

6 th Jan	<p>You may have read the book Jurassic Park by Michael Crichton, or seen the 1993 film and its sequels. In this week's first video, Rob Eastaway sheds some light on an interesting fractal pattern called the Dragon Curve that features at various stages throughout the book. The second video (Unfolding the Dragon) is a really nice computer simulation showing repeated iterations of the pattern as it 'unfolds'. Dragon Curve - https://www.youtube.com/watch?v=wCyC-K_PnRY Unfolding The Dragon - https://www.youtube.com/watch?v=UBuPWdSbyf8</p>	
13 th Jan	<p>There are many links between Cartography (the science and art of maps) and Mathematics. For example, maps can be used as a type of chart to display data, using colours or other labels. A choropleth map uses different shades of colour to show regional variations in a chosen measurable variable. A cartogram is a type of graph where the area of each region is distorted to represent something other than its land area (for example, its population or GDP). There is a branch of mathematics called projective geometry which mathematics undergraduates are often given the opportunity to study at university, which can be used to find different ways of transferring the location of places on a spherical globe onto the flat, rectangular plane of a sheet of paper (representing the Earth as a flat map) Some of these projections are better than others in terms of preserving the areas or distances between places.</p> <p>In this week's video, Hank Green summarises 42 interesting maps (just a warning, he talks very quickly!) https://www.youtube.com/watch?v=dldHalRY-hY</p>	
20 th Jan	<p>In this week's video by 3Blue1Brown, Grant Sanderson ponders the relationship between the area of a circle and the surface area of a sphere. The mathematical reasoning he uses links to the ideas touched upon in last week's topic of projective geometry, projecting a sphere onto a flat plane like the Earth's surface onto a map.</p> <p>The maths used is quite complicated in parts, but the visuals are very nice. Remember, videos on this channel are often on advanced topics beyond the scope of A Level, so don't be put off if you don't understand everything! https://www.youtube.com/watch?v=GNCfJFmqEc8</p>	
27 th Jan	<p>If you are interested in computer science and internet security you may already be aware that encryption of data on the internet requires the use of some advanced level mathematics. The first video (by Khan Academy) summarises the basics of encryption and ciphers. The second video (by Computerphile) goes into more detail of how large prime numbers are used in RSA encryption on the internet. https://www.youtube.com/watch?v=6-JjHa-qLPk</p>	
3 rd Feb	<p>Mathologer is a YouTube channel that creates videos on a wide range of mathematical topics – it is worth checking out their other videos if you haven't seen it before. This video looks at the link between plotting times tables on a circle and the Mandelbrot set, the complex fractal pattern that we saw in video #9 earlier this year. The idea of modular arithmetic (placing integers around a circle and counting around) is studied by our further maths students in the Discrete part of the course. https://www.youtube.com/watch?v=qhbuKbxJsk8</p>	
10 th Feb	<p>This week's link is a series of podcasts called "Taking Maths Further". They are relatively short (20-25 minutes each) and cover a wide range of applications of maths including forensics, astrophysics, accountancy and links with art and music. They are an excellent super-curricular resource which may give you inspiration for your UCAS personal statement, and may introduce you to different careers in mathematics that you may not have previously thought of.</p> <p>They can be accessed by either following the link below (you need to click on "Guest Access" then scroll down almost to the bottom, and click on the "podcasts" link) https://amsp.org.uk/resource/students-fmsp-legacy-resources-archive</p>	

24 th Feb	<p>Mathematics is an important part of the programming and modelling process in animated series and films. In this video, Zach Star talks about some of the mathematics used in making Disney Pixar films.</p> <p>He also discusses some of the considerations made by structural engineers and architects when designing new buildings in order to make them safe, such as the impact of vibrations and resonance.</p> <p>https://www.youtube.com/watch?v=FrbK2c-UMTY</p>	
3 rd march	<p>You may have seen the display in the Maths corridor in Ash about the 7 Millennium problems, which were set in the year 2000 as important unsolved problems in mathematics, each with a \$1,000,000 prize for the person who solves it. So far, only one of these problems has been solved; the Poincaré Conjecture was solved in 2003 by Grigori Perelman (he declined the prize money)</p> <p>This week's video explains one of the still unsolved problems, the Riemann Hypothesis. https://www.youtube.com/watch?v=zlm1aajH6gY</p>	
10 th March	<p>Dr Tom Crawford is a Mathematics tutor at the University of Oxford; he also does outreach projects with schools and produces a lot of interesting Maths videos and articles on his website Tom Rocks Maths. This week's video is a short (60 second) summary of his PhD thesis on the mathematical modelling of ocean pollution. There is also a longer video which goes into this in more depth, and a link to his thesis and other articles for further reading.</p> <p>https://www.youtube.com/shorts/gZrJMkUmpgg</p>	
17 th March	<p>Crash Course is a brilliant YouTube channel which produces dozens of series of short videos covering all kind of topics, including History and Politics, Economics, and the Physical and Social Sciences. They are all high quality, engaging and very well researched – it is definitely worth spending some time looking at the topics to find one that takes your interest (I watched all of the World History ones a few years ago and learned all kinds of new things!)</p> <p>This week's video is from the series on Statistics; it looks at Science Journalism, and how data is interpreted to create news headlines.</p> <p>https://www.youtube.com/watch?v=ZwqOoD17_LU</p>	
24 th March	<p>How many people have you met in your life who share the same birthday as you? Assuming you're not a twin, the number might be quite low.</p> <p>Now imagine a room full of people; what is the likelihood that two people in the room share the same birthday? This will clearly depend on the number of people in the room. This famous problem is known as the birthday problem, and the probabilities involved may surprise you.</p> <p>https://www.youtube.com/watch?v=KtT_cgMzHx8</p>	
31 st March	<p>You have probably played with a Rubik's Cube at least once in your life; you may have even been able to solve it. The mathematics behind the Rubik's Cube is quite complex, and falls into an area of mathematics called Group Theory and Permutations.</p> <p>Solving the cube has become a hobby or interest for millions of people since its invention in 1974. This week's video gives an introduction for one method of solving the cube. https://www.youtube.com/watch?v=R-R0KrXvWbc</p>	

21 st April	<p>This week's video considers a problem in Physics known as the book stacking problem – the question of how far you can allow a pile of objects such as books to overhang a surface without falling over the edge. This fits in nicely with the year 2 mechanics topic of Moments. Why not watch the video, then try it for yourself (with a pile of non-breakable objects!)?</p> <p>https://www.youtube.com/watch?v=J9uJi_DmZgc</p>	
28 th April	<p>There are very close links between Mathematics and Architecture; in order to build a structure an architect needs to ensure the forces involved are stable and balanced out as much as possible. In this week's video, the University of Oxford's Dr Tom Crawford looks at the mathematics of building a dome.</p> <p>The cosh function mentioned in the video is one of the hyperbolic functions studied by further maths students, and has close links with the trigonometric function, cosine.</p> <p>https://www.youtube.com/watch?v=WlibclD_oYU</p>	
5 th May	<p>We often use the word "average" to mean "typical" or, in some sense, "normal". We can calculate various different averages of a set of data using statistical methods – but what do we really mean when we say something is "average"? In this week's video, Matt Parker ponders the question of whether the average person really exists.</p> <p>Does The Average Person Exist? -</p> <p>https://www.youtube.com/watch?v=NbiveCNBOxk</p>	
12 th May	<p>This week's video focuses on problem called the Collatz Conjecture (in mathematics, a conjecture is a theorem that hasn't been proven yet) While the problem itself seems straightforward to understand, it turns out that proving it is much more difficult.</p> <p>The Simplest Math Problem No One Can Solve -</p> <p>https://www.youtube.com/watch?v=094y1Z2wpJg</p>	
19 th May	<p>During World War II, a top secret government codebreaking centre was set up at a country house in Bletchley, Milton Keynes, to decipher intercepted messages. The most famous of these codes used the German Enigma and Lorenz ciphers. One of the most well-known code breakers in Bletchley Park at this time was Alan Turing; there is more information about his work and life on the Famous Mathematicians display board in the Ash corridor.</p> <p>This week's videos give an insight into how the Enigma machines worked and into the codebreaking that took place at Bletchley Park</p> <p>https://www.youtube.com/watch?v=G2_Q9FoD-oQ&t=0s</p>	
2 nd June	<p>This week's video is a fascinating proof by 3blue1brown on why slicing into a cone at an angle results in an ellipse, or a circle stretched in the x- and y-directions. Further Maths students will have encountered ellipses in the conic sections part of the course.</p> <p>Why slicing a cone gives an ellipse -</p> <p>https://www.youtube.com/watch?v=pQa_tWZmlGs</p>	
9 th June	<p>Chaos theory looks at systems of objects that are highly sensitive to initial conditions and can quickly diverge away from what is initially predicted; for example, the weather, which can be almost impossible to predict with accuracy after more than a few days.</p> <p>This week's video looks at different examples of Chaos theory, including the famous Three Body Problem which models three objects such as planets and their movement in relation to each other.</p> <p>https://www.youtube.com/watch?v=fDek6cYijxl</p>	