



MATHEMATICS AND FURTHER MATHEMATICS A LEVEL SUPER-CURRICULAR



AIMING FOR THE TOP AND ASPIRING HIGH

Reading Tasks

Why do buses come in threes? Read Why do buses come in threes? The Hidden Mathematics of Everyday Life. Rob Eastaway and Jeremy Wyndham's book will change the way you see the world!

Power in Numbers: The Rebel Women of Mathematics - Power in Numbers: The Rebel Women of Mathematics by Talithia Williams. Read about female mathematicians throughout history.

17 Equations that changed the World - Read 17 Equations that changed the World by Professor Ian Stewart

Humble Pi – a comedy of maths errors

Read Humble Pi – a comedy of maths errors, by Matt Parker. Read real life stories about how maths goes wrong with real world consequences by mathmagician Matt Parker.

The Man Who Loved Only Numbers

Read The Man Who Loved Only Numbers: The Story of Paul Erdős and the Search for Mathematical Truth, by Paul Hoffman.

The Simpsons and their mathematical secrets

Read The Simpsons and their mathematical secrets, by Simon Singh. See how a writing team of mathematicians include mathematics within this popular animation.

The Music of the Primes

Read The Music of the Primes: why an unsolved problem in mathematics matters, by Marcus Du Sautoy.

Significant Figures

Read Significant Figures: Lives and works of trailblazing mathematicians, by Professor Ian Stewart. History of many mathematicians and their influences on modern society.

Hello World: How to be Human in the Age of the Machine

Read Hello World, How to be Human in the age of the machine, by Dr Hannah Fry. You are accused of a crime. Who would you rather determines your fate – a human or a machine?

Listening Tasks

Relatively Prime

Listen to maths [documentary podcast](#) – Relatively Prime, by Samuel Hansen.

Numberphile

Listen to [podcasts](#) from The Numberphile, full of fascinating number facts.

Carl Friedrich Gauss

Listen to In our Time with Melvyn Bragg discussing the [ideas of Carl Friedrich Gauss](#).

A Brief History of Mathematics

Listen to A Brief History of Mathematics, a BBC Radio 4 [podcast](#) by Marcus du Sautoy Listen to all 10 episodes.

The Infinite Monkey Cage

The Infinite Monkey Cage, a [podcast](#) with Robin Ince and Professor Brian Cox.

The Curious Cases of Rutherford and Fry

Listen to The Curious Cases of Rutherford and Fry [podcast](#), with Adam Rutherford and Hannah Fry.

Watching Tasks

Hidden Figures

Read Hidden Figures by Margot Lee Shetterly. The story of the African-American Mathematicians of NASA who helped America win the Space Race. Read the book and watch the film.

Matt Parker

Visit Standup Mathematician Matt Parker's Youtube channel for a [selection of fun videos](#) on a whole range of topics.

Ben Sparks

For more videos to watch try www.bensparks.co.uk a mathematician, musician and speaker. Watch the golden ratio and listen to Ben play Sting's Shape of My heart as part of Sacred Geometry talk

The Man Who Knew Infinity

Watch 'The Man Who Knew Infinity', starring Dev Patel Enjoy the biography based drama on the mathematician Srinivasa Ramanujan.

Frames of Mind

Watch [this](#) 60 minute documentary film as nine UK-based mathematicians offering insights into their mathematical thinking across a broad range of fields.

A Beautiful Mind

Watch the movie 'A Beautiful Mind', starring Russell Crowe, directed by Ron Howard. Learn about the mathematical genius of John Forbes Nash Jr.

Tom Crawford on Covid

Watch Tom Crawford explain the SIR disease model for COVID-19 (Coronavirus) as well as videos on a wide range of mathematics on his [Tom Rocks Maths website](#).

Magic Numbers

Watch BBC Magic Numbers Mysterious World of Maths, a BBC [documentary](#) exploring the world of maths with Dr Hannah Fry.

Particle Fever

Particle Fever follows six brilliant scientists during the launch of the Large Hadron Collider, marking the start-up of the biggest and most expensive experiment in the history of the planet, pushing the edge of human innovation.

The Story of 1

The Story of 1 is a BBC [documentary](#) about the history of numbers, and in particular, the number 1. It was presented by former Monty Python member Terry Jones.

You will need to subscribe to watch the video.

Research Tasks

Alan Turing

Research the life and work of Alan Turing. Watch 'The Imitation Game', and read the book of the same name, about his involvement in code breaking of Enigma.

Georg Cantor

Research Georg Cantor and different infinities: <https://mathigon.org/timeline>

Florence Nightingale

Research Florence Nightingale to understand her contributions to the world of statistics: <https://mathigon.org/timeline>

Ada Lovelace

Research Ada Lovelace and her works: <https://mathigon.org/timeline>

Homer Hickman

Research Homer Hickman. Read his biography Rocket Boys. Watch the movie October Sky starring Jake Gyllenhaal. Learn how the son of a coal miner designed.

Muhammed Al-Khwarizmi

Research Muhammed Al-Khwarizmi. Look at the [timeline](#) of mathematicians to see how each builds on the work of others.

Golden Gate Bridge

Research the Golden Gate Bridge and how the curvature of the earth changes its structure.

Trips & Visits

Bletchley Park

Visit Bletchley Park and explore the world of coding and maths - details [here](#).

Mechanical, Art & Design museum

Visit the Mechanical, Art & Design museum, Stratford-upon-Avon <https://themadmuseum.co.uk/>

Science Museum

Visit the Science Museum, Maths Gallery [here](#).

London Maths Trails

Follow the London Maths Trails created by Chris Olley at KCL [here](#).

Bank of England Museum

Visit the Bank of England Museum [here](#).

National Museum of Maths

National Museum of Mathematics in New York if you ever happen to be there... <https://momath.org/>

Creative Tasks

Impossible hexagon

Draw an impossible Hexagon [here](#).

What other optical illusions can you draw?

Things to make and do in the fourth dimension

Read Things to make and do in the fourth dimension by Matt Parker. What can you create?

Student Led Tasks

NRich

Explore problems from [nrich maths](#), including mathematical art.

The two train puzzle

Try the [two trains puzzle](#) as discussed in the film A Beautiful Mind.

Maths Careers

Read articles, investigate problems, get creative and plan visits. Everything mathematical!

Click [here](#) for information on careers in maths from the Institute of Maths.

Paper planes

Design a mathematically perfect paper airplane. Click [here](#) for ideas

Maths jokes!

Love a maths joke! Love a puzzle. Find them all [here](#).

Maths Challenges

Develop your problem solving skills by trying these [UKMT Maths Challenge questions](#).

Cambridge University

Look up Cambridge University maths [here](#) for resources with the aim of enabling all students to explore the connections that underpin mathematics.

A good mathematician

Think about what makes a good mathematician....Visit [this website](#) to get some prompts and links to many other activities.

RISPS

Look up RISPS Open-ended investigative activities for the A Level Pure Mathematicians [here](#).

Institute of Mathematics

Join the Institute of Mathematics and its applications [here](#). Subscribe to e16Plus newsletter.

Plus Magazine

Subscribe to the online Plus Magazine: <https://plus.maths.org/content/about-plus>

Brilliant problems

Try challenging mathematical problems:<https://brilliant.org/dailyproblems/>

Wolfram Alpha

Use [Wolfram Alpha](#) for its fascinating search engine and to explore new mathematics.

Desmos

Use [Desmos](#) to create interesting and different graphs.

Society of Young Mathematicians

Join the Society of young Mathematicians [here](#).

Biographies of mathematicians

Look up the MacTutor History of Maths Archives for biographies of thousands of mathematicians [here](#).

Chalk Dust

Look up a magazine for the mathematically curious [here](#).

Options after A Level

Click on [Students](#) and follow the links for options after mathematics at KS5.

Revision video

Make video clips of maths topics to help GCSE students with revision.

Puzzles

Lots of fun puzzles to try at: <https://mathschallenge.net/>

Celebrate Pi Day

Celebrate Pi day with an interesting way to calculate Pi using colliding blocks [here](#).