

The Super Curriculum

The Super Curriculum

Super curricular activities are those that take your regular curriculum *further*. They take the subjects you study in the classroom *beyond* that which your teacher has taught you or what you've done for home learning. For example, you may go into more depth on something you picked up in the classroom, or learn about a new topic altogether.

These activities are normally in the form of extra reading but they can take many other forms, like watching videos online, downloading podcasts, attending lectures, visiting museums or entering academic competitions.

Engaging in super curricular activities will help you develop a love for your favourite subject or subjects. In this booklet, there are a range of activities, suggested by your teachers. They are by no means exhaustive lists but should get you started. I would encourage you to share ideas and opportunities you come across with your teachers so that, over time, the recommended activities in this booklet can grow.

In the future, employers or universities will be interested to hear about what super curricular activities you have engaged in; they will be interested in what you have learnt and impressed by your efforts.

I wish you well in your pursuit of super curricular activities!

Dr Caroline Creaby Deputy Headteacher: Curriculum

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So you think you've got problems?', by Alex Bellos.	Hidden Figures, by Margot Lee Shetterly	Wild Maths – explore, imagine, experiment, create!
Surprising and rewarding puzzles to sharpen your mind.	The story of the African-American Mathematicians of NASA who helped America win the Space Race.	Try and explore one of the games from the nrich site:
	Read the book and watch the film.	http://wild.maths.org/
King's College London Visit KCL site and attempt the weekly challenge competitions https://www.kingsmathsschool.com/weekly-maths-challenge	Research Pythagoras and the maths he explored Find out about his contributions to modern Mathematics. Use this timeline to see how mathematicians "Stand on the Shoulders of Giants" https://mathigon.org/timeline/	Read '100 essential things you didn't know about Maths and the Arts', by John D Barrow. What can you create from the book?
Create tangrams using the online tool	Science Museum Maths Gallery	STEM Centre Stevenage Visit the Stem Discovery Centre
https://mathigon.org/tangram You can also make the shapes out of paper. What other pictures can you make?	Visit the maths gallery in the Science Museum, London http://www.sciencemuseum.org.uk /see-and-do/mathematics-winton-gallery?keywords=mathematics	in Stevenage https://stemdiscoverycentre.co. uk
Watch 'The Man Who Knew Infinity', starring Dev Patel Enjoy the biography based drama about the mathematician Srinivasa Ramanujan.	Simon Singh's Numbers Listen to 5 BBC Radio 4 podcasts on 'special numbers' https://www.bbc.co.uk/programmes/p00cl746/episodes/player	A Brief History of Mathematics, a BBC Radio 4 podcast by Marcus du Sautoy Listen to all 10 episodes https://www.bbc.co.uk/program mes/b00srz5b/episodes/player
Research the mathematics of magic. Many magic tricks are based on mathematics. What magic tricks can you find? Try them out on your friends!	Watch BBC Teach: The Maths Show with Matt Parker https://www.youtube.com/playlis t?list=PLcvEcrsF_9zKTfYVSyNpNGj ewbf4lmpls	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 the space shuttle for NASA.
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Creative task	÷ਊ́÷ St	tudent-led task

Alex's Adventures in Numberland, by Alex Bellos Read an exhilarating cocktail of history, reportage and mathematical proofs that will leave you awestruck.	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.	Explore problems from nrich.maths, including: Mathematical art https://nrich.maths.org/secondary https://nrich.maths.org/public/to pic.php?group_id=48&code=-405
Transum Test yourself against the computer or each other in games of strategy. https://www.transum.org/Software/Game/	King's College London Visit KCL site and attempt the weekly challenge competitions. https://www.kingsmathsschool.com/weekly-maths-challenge	Design a house or a school. Produce a full scale drawing, calculate area and show all the relevant measurements. Complete the task by creating a paper or cardboard model.
Paletchley Park Visit Bletchley Park to explore the world of coding and maths. https://bletchleypark.org.uk/visit-us	Science Museum – Maths Gallery Visit the maths gallery in the Science Museum, London. http://www.sciencemuseum.org.uk/see-and-do/mathematics-winton-gallery?keywords=mathematics	Read articles, investigate problems, get creative and plan visits. Everything mathematical! https://www.mathscareers.org.uk/i-love-maths/
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.	Listen to Travels in a Mathematical World podcast, by Peter Rowlett - featuring mathematicians talking about their work as well as features on maths history and maths news; https://www.travelsinamathematical world.co.uk/	BBC Magic Numbers Mysterious World of Maths BBC documentary exploring the world of maths with Dr Hannah Fry https://www.youtube.com/watch ?v=TKKUZoqSTxw
Watch Numberphile – maths and movies (Animation at Pixar) https://www.youtube.com/watc h?v=mX0NB9IyYpU There are lots of numberphile clips you can watch!	Simon Singh's Numbers Listen to 5 BBC Radio 4 podcasts on 'special numbers' https://www.bbc.co.uk/programmes/p00cl746/episodes/player	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
Reading tas Substituting tages	_	Writing task Watching task

Research task

Creative task

Trip or visit

Student-led task

How Not to Be Wrong: The Hidden Maths of Everyday Life, by Jordan Ellenberg. Discover how maths touches on everything we do, and a little mathematical knowledge reveals the hidden structures that lie beneath the world's messy and chaotic surface.	The Simpsons and their mathematical secrets, by Simon Singh See how a writing team of mathematicians include mathematics within this popular animation.	This is not a Maths Book, by Anna Weltman A fusion of maths and art/drawing. Work through fun drawing challenges with a mathematical basis.
Research Srinivasa Ramanujan Find out about his contributions to modern Mathematics. Use this timeline to see how mathematicians "Stand on the Shoulders of Giants" https://mathigon.org/timeline/	Wild Maths – explore, imagine, experiment, create! Try and explore one of the games from the nrich site: http://wild.maths.org/	Sign up to Parallel and receive a weekly maths challenge to complete. https://parallel.org.uk/
Visit the Stem Discovery Centre in Stevenage https://stemdiscoverycentre.co.uk	Can you draw an impossible triangle? Watch the clip to help. https://www.youtube.com/watch?v=S FUp4IFc1cA What other impossible shapes can you draw?	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.
Listen to Travels in a Mathematical World podcast, by Peter Rowlett - featuring mathematicians talking about their work as well as features on maths history and maths news; http://www.travelsinamathemat icalworld.co.uk/	Watch the movie 'A Beautiful Mind', starring Russell Crowe, directed by Ron Howard. Research the mathematical genius of John Forbes Nash Jr.	Listen to A Brief History of Mathematics, a BBC Radio 4 podcast by Marcus du Sautoy Listen to all 10 episodes https://www.bbc.co.uk/programmes/b00srz5b/episodes/player
Research prime numbers by watching clips of numberphile https://www.youtube.com/playlist?list=PL0D0BD149128BB06F	Science Museum Maths Gallery Visit the maths gallery in the Science Museum, London. http://www.sciencemuseum.org.uk/see- and-do/mathematics-winton- gallery?keywords=mathematics	Explore problems from nrich.maths, including: Mathematical art https://nrich.maths.org/secondary https://nrich.maths.org/public/to pic.php?group_id=48&code=-405
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Trip or visit

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Research task

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Why do buses come in threes? The Hidden Mathematics of Everyday Life. Rob Eastaway and Jeremy	What is Mathematics? An elementary approach to Ideas and Methods Richard Courant's book offers an	Draw an impossible Hexagon https://www.youtube.com/watch?v =dq4z821A7L4
Wyndham's book will change the way you see the world!	entertaining and accessible portrait of the mathematical world.	What other optical illusions can you draw?
The infinite hotel paradox https://www.youtube.com/watch?v= Uj3_Kqkl9Zo&feature=youtu.be	Watch You-tube clips or listen to podcasts from The Numberphile full of fascinating number facts https://www.numberphile.com/	Research Archimedes Find out about his contributions to the world of Mathematics. Use this timeline to see how mathematicians "Stand on the Shoulders of Giants" https://mathigon.org/timeline/
Create a revision video suitable for Key Stage 3 students on a topic of your choice.	Challenge yourself with the puzzles on this great website. https://mathigon.org/puzzles	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
Brilliant Try the daily challenges or other fabulous puzzles on this site. https://brilliant.org/daily-problems/	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.	Research the links between the Fibonacci Sequence, the Golden Ratio and Nature. This could be a starting point. https://www.mathsisfun.com/numbers/nature-golden-ratio-fibonacci.html
Park and explore the world of coding and maths https://www.bletchleypark.org.uk/visit-us	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.	Read articles, investigate problems, get creative and plan visits. Everything mathematical! https://www.mathscareers.org.uk/i-love-maths/
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Trip or visit

Student-led task

Euler's Pioneering Equation: The most beautiful theorem in mathematics Robin Wilson explores this simple, elegant and profound formula $e^{i\pi} + 1 = 0$	Fermat's Last Theorem, by Simon Singh The story of how Andrew Wiles solved a very old problem! Then extend by researching Pierre de Fermat and all his discoveries in calculus.	Listen to maths documentary podcast – Relatively Prime, by Samuel Hansen http://relprime.com/
Work in teams to solve mathematical problems. https://amsp.org.uk/resource/maths-feast-materials	Research the life and work of Carl Friedrich Gauss Find out about his contributions to the world of Mathematics. Use this timeline to see how mathematicians "Stand on the Shoulders of Giants" https://mathigon.org/timeline/	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.
Read articles, investigate problems, get creative and plan visits. Everything mathematical! https://www.mathscareers.org.uk/i-love-maths/	Create a revision video suitable for a Year 10 student on a topic of your choice	Love a maths joke! Love a puzzle. Find them all here http://www.mrbartonmaths.com /jokes/#general
Explore problems from nrich.maths, including: Mathematical art https://nrich.maths.org/secondary https://nrich.maths.org/public/topic.ph p?group_id=48&code=-405	Watch You-tube clips or Ilisten to podcasts from The Numberphile – full of fascinating number facts https://www.numberphile.com/	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 the space shuttle for NASA.
Can you take the square root of a negative number? Learn about IMAGINARY numbers here https://www.khanacademy.org/math/algebra2/introduction-to-complex-numbers-algebra-2?t=practice	Try some STEM related origami and understand the maths behind them: https://www.stem.org.uk/resour ces/community/collection/19810 /origami-mathematics	Develop your problem solving skills by trying these UKMT Maths Challenge questions. http://www.drfrostmaths.com/homework/browse.php?mode=ukmt
Reading task Substituting task Research task	• v	Vriting task Vatching task rip or visit
Creative task	.N/c.	tudent-led task

Read 17 Equations that changed the World by Professor Ian Stewart (ISBN: 9781846685316	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!	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, by Simon Singh See how a writing team of mathematicians include mathematics within this popular animation.	The Music of the Primes: why an unsolved problem in mathematics matters, by Marcus Du Sautoy.	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.
Read Significant Figures: Lives and works of trailblazing mathematicians, by Professor lan Stewart History of many mathematicians and their influences on modern society	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?	Power in Numbers: The Rebel Women of Mathematics by Talithia Williams Read about female mathematicians throughout history
Watch You-tube clips or Ilisten to podcasts from The Numberphile – full of fascinating number facts https://www.numberphile.com/	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.	Visit Standup Mathematician Matt Parker's Youtube channel for a selection of fun videos on a whole range of topics https://www.youtube.com/chan nel/UCSju5G2aFaWMqnOYBtq5A
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	Watch 'The Man Who Knew Infinity', starring Dev Patel Enjoy the biography based drama on the mathematician Srinivasa Ramanujan.	Watch this 60 minute documentary film as nine UK-based mathematicians offering insights into their mathematical thinking across a broad range of fields https://www.lms.ac.uk/library/frames-of-mind
Reading task Listening task Research task Creative task	• \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	Writing task Watching task Trip or visit Student-led task

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	Watch the movie 'A Beautiful Mind', starring Russell Crowe, directed by Ron Howard. Learn about the mathematical genius of John Forbes Nash Jr.	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 https://tomrocksmaths.com/2020/03/18/oxford-mathematician-explains-sir-disease-model-for-covid-19-coronavirus/
BBC Magic Numbers Mysterious World of Maths BBC documentary exploring the world of maths with Dr Hannah Fry. https://www.youtube.com/wa tch?v=TKKUZoqSTxw	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.	Film: 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 https://vimeo.com/56113926
Research Gearg Cantor and different infinities. https://mathigon.org/timeline	Research Florence Nightingale to understand her contributions to the world of statistics https://mathigon.org/timeline	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 the space shuttle for NASA.
Research Ada Lovelace and her works https://mathigon.org/timeline	Research Muhammed Al- Khwarizmi https://mathigon.org/timeline/al- khwarizmi Look at the timeline of mathematicians to see how each builds on the work of others.	Anyone for magic? Learn the maths behind magic tricks and try the magic out on your friends and family. https://www.youtube.com/watch?v= GUB2JrKyVBU https://mathsnoproblem.com/blog /learner-focus/creative-magical- maths-activities/
Read Things to make and do in the fourth dimension by Matt Parker. What can you create?	Draw an impossible Hexagon https://www.youtube.com/watch?v =dq4z821A7L4 What other optical illusions can you draw?	Try some STEM related origami and understand the maths behind them https://www.stem.org.uk/resources/community/collection/198 10/origami-mathematics
Reading tas Listening ta	_	riting task ratching task

Research task

Creative task

Trip or visit

Student-led task

visit Bletchley Park and explore the world of coding and maths https://www.bletchleypark.org.uk/visit-us	Visit Mechanical, Art & Design museum Stratford-upon-Avon https://themadmuseum.co.uk/	Science Museum, Maths Gallery http://www.sciencemuseum.org.uk /see-and-do/mathematics-winton- gallery?keywords=mathematics
Q London Maths Trails created by Chris Olley at KCL http://www.themathszone.com/?p=641	Pank of England Museum https://www.bankofengland.co.uk/museum/plan-your-visit	National Museum of Mathematics in New York if you ever happen to be there https://momath.org/
Listen to A Brief History of Mathematics, a BBC Radio 4 podcast by Marcus du Sautoy Listen to all 10 episodes. https://www.bbc.co.uk/programmes/b00srz5b/episodes/player	Listen to In our Time with Melvyn Bragg discussing the ideas of Carl Friedrich Gauss. https://www.bbc.co.uk/programm es/b09gbnfj	Listen to maths documentary podcast – Relatively Prime, by Samuel Hansen http://relprime.com/
The Infinite Monkey Cage, a podcast with Robin Ince and Professor Brian Cox. https://www.bbc.co.uk/program mes/b00snr0w/episodes/downloads	Listen to The Curious Cases of Rutherford and Fry, with Adam Rutherford and Hannah Fry. https://www.bbc.co.uk/programmes/b07dx75g/episodes/player	Try the two trains puzzle https://mathworld.wolfram.com/TwoTrainsPuzzle.html as discussed in the film A Beautiful Mind.
Design a mathematically perfect paper aeroplane. https://www.youtube.com/watch?v=3BNg4fDJC8A	Cambridge University https://undergroundmathem atics.org/ for resources with the aim of "Enabling all students to explore the connections that underpin mathematics	Think about what makes a good mathematicianVisit https://nrich.maths.org/14652 to get some prompts and links to many other activities.
Help teach GCSE students	Research the Golden Gate Bridge and how the curvature of the earth changes its structure	Proving Pythagoras' Theorem http://www.cut-the- knot.org/pythagoras/ https://www.youtube.com/watch ?v=0PbrSnAu7To&disable_polyme r=true
Reading task		Writing task
Stephing Listening task	•	Watching task
Q Research task	•	Trip or visit
Creative task	÷ `	Student-led task

RISPS Open-ended investigative activities for the A Level Pure Mathematicians http://www.s253053503.websiteh ome.co.uk/risps/index.html	Love a maths joke! Love a puzzle. Find them all here http://www.mrbartonmaths.co m/jokes/#general	Join the Institute of Mathematics and its applications https://ima.org.uk/support/stude nt/ Subscribe to e16Plus newsletter
Subscribe to the online Plus Magazine https://plus.maths.org/content/about-plus	Try challenging mathematical problems. https://brilliant.org/daily-problems/	Read articles, investigate problems, get creative and plan visits. Everything mathematical! https://www.mathscareers.org.uk/i-love-maths/
Use Wolphram Alpha for its fascinating search engine and to explore new mathematics https://www.wolframalpha.com/examples/mathematics/	Use Desmos to create interesting and different graphs https://www.desmos.com/calculator	Join the Society of young Mathematicians. https://www.m- a.org.uk/syms#:~:text=The%20 Society%20of%20Young%20M athematicians,motivates%20an d%20encourages%20young%2 Omathematicians.
Mathematics Careers http://www.futuremorph.org/1 4-16/next-steps/follow-your- favourite-subject/careers-from- maths/	Mathematics Careers https://www.mathscareers.org. uk/	MacTutor History of Maths Archives – biographies of thousands of mathematicians https://mathshistory.st-andrews.ac.uk/
A magazine for the mathematically curious http://chalkdustmagazine.com/	Practice for UKMT challenges https://www.drfrostmaths.com/browse.php?mode=ukmt	Click on Students and follow the links for options after mathematics at KS5 https://amsp.org.uk/
Make video clips of maths topics to help GCSE students with revision	Lots of fun puzzles to try https://mathschallenge.net/	Celebrate Pi day An interesting way to calculate Pi using colliding blocks <a href="https://www.youtube.com/watch?v=" https:="" td="" watch?v="https://www.youtube.com/watch?v=" www.you<="" www.youtube.com="">
Reading task		Writing task

Watching task

Student-led task

Trip or visit

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Listening task

Research task

Creative task





Sandringham School

'Everybody can be Somebody'