



KS3

Doing

- Visit Bletchley Park, home of 'The Codebreakers'.

<https://bletchleypark.org.uk/>

- Play strategy games e.g. Poker, Bridge, Chess, Go, Risk, Monopoly and Dominos.
- Snowflake, Seashell, Star – a colouring book by Alex Bellos
- Enter the Junior Maths Challenge

<https://www.ukmt.org.uk/individual-competitions/junior-challenge/>

- Explore the NRICH website for games, activities, problems and solutions.

<https://nrich.maths.org/secondary>

- Try the puzzles at MathSphere

<http://www.mathsphere.co.uk/resources/MathSphereMathsPuzzles.htm>

- Sign up to Brilliant.org for learning through interactive problem solving

<https://brilliant.org/>

Watching and Listening

- A Beautiful Mind (PG-13): After John Nash, a brilliant but asocial mathematician, accepts secret work in cryptography, his life takes a turn for the nightmarish.
- Tron: Legacy (PG): The son of a virtual world designer goes looking for his father and ends up inside the digital world that his father designed. He meets his father's corrupted creation and a unique ally who was born inside the digital world.
- The Martian (PG-13): An astronaut becomes stranded on Mars after his team assume him dead, and must rely on his ingenuity to find a way to signal to Earth that he is alive.
- October Sky (PG): The true story of Homer Hickam, a coal miner's son who was inspired by the first Sputnik launch to take up rocketry against his father's wishes.



Enrichment and Challenge Programme

- Donald in Mathmagic Land: Donald Duck goes on an adventure in which it is explained how mathematics can be useful in real life. Through this journey it is shown how numbers are more than graphs and charts, they are geometry, music, and magical living things.

<https://www.youtube.com/watch?v=PvceKeHlOSg>

Reading

- Check the Gunnersbury Reading List.



Enrichment and Challenge Programme

Most of the suggestions for KS3 are still relevant for KS4

Doing

- Enter the Intermediate Maths Challenge

<https://www.ukmt.org.uk/individual-competitions/intermediate-challenge/>

- Explore the NRICH website for games, activities, problems and solutions.

<https://nrich.maths.org/secondary>

Watching and Listening

- Watch 'The Code' by Marcus Du Sautoy

[Part 1](#)

- Watch 'The Imitation Game', a film about Alan Turing.
- Watch 'Moneyball', about the use of statistical analysis to build a winning team.
- Find radio programmes on some mathematical topics on the link below.

<https://www.bbc.co.uk/programmes/p01gyd7j>

Reading

- Read 'Alex's Adventures in Numberland' by Alex Bellos

<https://www.theguardian.com/science/2011/nov/09/alex-adventures-numberland-alex-bellos-review>

- Read 'Outliers' by Malcom Gladwell

<https://www.goodreads.com/book/show/3228917-outliers>

KS5

Doing

- Enter the Senior Maths Challenge

<https://www.ukmt.org.uk/individual-competitions/senior-challenge/>

- Try on-line Paper Trading
- Try the NRICH weekly challenges

<https://nrich.maths.org/weeklychallenge>

- Visit the Cambridge University STEP Support Programme website for help with development of advanced mathematical problem solving skills.

<https://maths.org/step/>

- Research Ada Lovelace and her works
- Research the works of John Forbes Nash Jr
- Research Carl Friedrich Gauss
- Use this link to find out about many more famous mathematicians.

<https://famous-mathematicians.com/>

- London Maths Trail created by Chris Olley at Kings College London

<http://www.themathszone.com/?p=377>

- Bank of England Museum

<https://www.bankofengland.co.uk/>

- Find out how Pythagoras was proven

<http://www.cut-the-knot.org/pythagoras>

- Join the Riangle challenge- ask your

teacher for more information

Watching and Listening

- The map of Mathematics – Domain of Science

<https://www.youtube.com/watch?v=OmJ-4B-mS-Y>

- How does maths guide ships at sea?

https://www.youtube.com/watch?v=AGCUM_jWtt4

- Hidden Figures: The story of a team of female African-American mathematicians who served a vital role in NASA during the early years of the U.S. space program
- *Julia Robinson and Hilbert's Tenth Problem*: A one-hour biographical documentary, *Julia Robinson and Hilbert's Tenth Problem* tells the story of an important American mathematician against a background of mathematical ideas.
- 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.

Reading

- Seventeen *Equations that Changed the World* by Ian Stewart (ISBN: 9781846685316)
- *The Man Who Knew Infinity*: Life of the Genius Ramanujan New Ed by Robert Kanigel (ISBN: 9780349104522)
- *The Mathematics of Ciphers*: Number Theory and RSA Cryptography by **S.C. Coutinho** (ISBN:9781568810829)
- *A History of Mathematics*, Third Edition 3rd Revised edition by **Carl B. Boyer**, Uta C. Merzbach (ISBN: 8601405590862)
- *Things to Make and Do in the Fourth Dimension* by Matt Parker (ISBN: 9780141975863)
- *Concepts of Modern Mathematics by Ian Stewart* (ISBN: 8601400596593)
- *Mathematics*: From the Birth of Numbers by **Jan Gullberg**, Peter Hilton (ISBN: 9780393040029)