Specifications:

Maths: Pearson Edexcel Level 3 Advanced GCE in Mathematics (9MA0)

Further Maths: Pearson Edexcel Level 3 Advanced GCE in Further Mathematics (9FM0)

Visit the Science Museum website and learn about how data and statistics are used in epidemiology and the spread of disease.

https://www.sciencemuseum.org.uk/objects-and-stories/medicine/epidemiology-public-health-science

The Winton Gallery is the area of the museum devoted to maths site, use the link to watch a short film about 10 interesting maths objects in the museum

https://www.sciencemuseum.org.uk/see-and-do/mathematics-winton-gallery

Listen to podcasts from Bletchley Park, The main decryption establishment for deciphering German code in the Enigma Machine in World War 2. https://bletchleypark.org.uk/our-story/podcasts

Go and visit if it reopens before the end of the summer.

Watch a Royal Institution Lecture

http://www.rigb.org/whats-on - there is some live streaming of talks

https://www.rigb.org/christmas-lectures

https://www.youtube.com/user/TheRoyalInstitution

Do some puzzles

https://nrich.maths.org/secondary-upper

http://mathwire.com/archives/enrichment.html

Watch some TED TALKS

http://blog.ted.com/8-math-talks-to-blow-your-mind/

Answer some puzzles and problems – write them up

nrich.maths.org/secondary-upper

Watch Numberphile videos to learn some wonderful maths ideas.

www.numberphile.com Good numberphile videos that feature James Grime include Infinity is bigger than you think, 17 and Sudoku Clues, and Rubik Cube Combinations. But you should check out all the videos.

Turn a photograph into spreadsheet

www.think-maths.co.uk/spreadsheet

Watch Matt Parker, maths comedian

https://www.youtube.com/user/standupmaths

Books

The Penguin Dictionary of Curious and Interesting Numbers D.Wells (Penguin, 1997)
A brilliant idea. The numbers are listed in order of magnitude with historical and mathematical information. Look up 1729 to see why it is `among the most famous of all numbers'.

Does God Play Dice by Ian Stewart.
An introduction to chaotic dynamics. Doesn't contain that many actual sums, but lots of pictures, and a good overview of the role of chaos. Quite a popularist style.

Fermat's Last Theorem by Simon Singh
It seems that everyone reads this. You won't stand out at all. An enjoyable read all the same.

The Music of the Primes by Marcus du Sautoy
About the Riemann hypothesis and other various topics in number theory.

The Number Devil: A Mathematical Adventure by Hans Magnus Enzensberger
An entertaining book, and certainly one for people looking for some interesting, yet accessible, mathematics in an easy-to-read style.

Alex's Adventures in Numberland (Alex Bellos)
A very accessible and well-written introduction to mathematics written in the style of a travelogue that demonstrates how useful, universal, interesting and beautiful mathematics is.

Why Do Buses Come in Threes?: The Hidden Mathematics of Everyday Life
(Rob Eastaway & Jeremy Wyndham)
Why is it better to buy a lottery ticket on a Friday? This and other fascinating questions are answered in this entertaining and highly informative book, which is ideal for anyone wanting to remind themselves - or discover for the first time - that maths is relevant to almost everything we do.

The Cartoon Guide to Statistics (Larry Gonick & Woolcott Smith)
An illustrated easy-to-read introduction to statistical concepts, with some real applications.

Professor Stewart's Cabinet of Mathematical Curiosities

(Ian Stewart)

A book of mathematical games, puzzles and facts. Ian Stewart has collected some interesting and entertaining puzzles in logic, geometry and probability. This is a great book for occupying idle moments.

Essential Mathematics for Games and Interactive Applications: A Programmer's Guide

(James M. Van Verth & Lars M. Bishop)

This book is the place to start if you want to know more about how maths is used in graphics and video games. The book is technical but accessible and it's packed with techniques using vectors, matrices and geometry.