



SWGS KS5 READING LIST: SUBJECT

The purpose of this reading list is to encourage students to read, enjoy and learn beyond the taught curriculum. You can use the resources here to support and to enrich your learning.

General * denotes main textbook(s)

R. B. J. T Allenby, Numbers and Proofs

'Numbers and Proofs' presents a gentle introduction to the notion of proof to give the reader an understanding of how to decipher others' proofs as well as construct their own. Useful methods of proof are illustrated in the context of studying problems concerning mainly numbers (real, rational, complex and integers). Ideal for students considering studying mathematics at university.

Ken Price, Maths Skills for Advanced Sciences

Maths Skills for Advanced Sciences has been specially written to support students by providing clear guidance on the mathematical concepts contained in advanced level science courses. It covers most of the mathematical requirements of Biology, Chemistry, and Physics courses, and some statistical techniques used in other sixth form subjects.

Ian Stewart, Nature's Numbers – Discovering Order and Pattern in the Universe

Mathematics has the power to open our eyes to new and unsuspected regularities in nature - the secret structure of a cloud or the hidden rhythms of the weather. This book aims to equip the reader with a mathematician's eye, changing the way we view the world.

Martin Gardner, Mathematical Circus

The twenty chapters of this book are nicely balanced between all sorts of stimulating ideas, suggested by down-to-earth objects like match sticks and dollar bills as well as by faraway objects like planets and infinite random walks. We learn about ancient devices for arithmetic and about modern explanations of artificial intelligence.

Leila Schneps, Math on Trial: How numbers get used and abused in the courtroom

In Math on Trial, mathematicians Leila Schneps and Coralie Colmez describe ten trials spanning from the nineteenth century to today in which mathematical arguments were used, and disastrously misused, as evidence. A colourful narrative of mathematical abuse, Math on Trial blends courtroom drama, history, and maths to show that legal expertise isn't always enough to prove a person innocent.

Simon Singh, The Simpsons and their Mathematical Secrets

Simon Singh reveals how the writers of the Simpsons have drip-fed morsels of number theory into the series over the last twenty-five years. Using specific episodes as jumping off points, Simon Singh brings to life the most intriguing and meaningful mathematical concepts, ranging from pi and the paradox of infinity to the origins of numbers and the most profound outstanding problems that haunt today's generation of mathematicians.

Simon Singh, Fermat's Last Theorem – the story of a riddle that confounded the world's greatest minds for 358 years

For over 350 years, proving Fermat's Last Theorem was the most notorious unsolved mathematical problem, a puzzle whose basics most children could grasp but whose solution eluded the greatest minds in the world. In 1993, after years of secret toil, Englishman Andrew Wiles announced to an astounded audience that he had cracked Fermat's Last Theorem. In 'Fermat's Last Theorem' Simon Singh has crafted a remarkable tale of intellectual endeavour spanning three centuries.

Margot Lee Shetterly, Hidden Figures: the untold story of the African American women who helped win the space race

Set against the backdrop of the Jim Crow South and the civil rights movement, this book tells the story of NASA's African-American female mathematicians who played a crucial role in America's space program. Moving from World War II through NASA's golden age, touching on the civil rights era, the Space Race, the Cold War, and the women's rights movement, Hidden Figures interweaves a rich history of scientific achievement and technological innovation with the intimate stories of five women.

David Spiegelhalter, The Art of Statistics: How to learn from data

In The Art of Statistics, David Spiegelhalter guides the reader through the essential principles we need in order to derive knowledge from data. Drawing on real world problems to introduce conceptual issues, he shows us how statistics can help us determine the luckiest passenger on the Titanic, whether serial killer Harold Shipman could have been caught earlier, and if screening for ovarian cancer is beneficial.

Kit Yates, The Maths of Life and Death: Why maths is (almost) everything

Yates explores the true stories of life-changing events in which the application - or misapplication - of mathematics has played a critical role: patients crippled by faulty genes and entrepreneurs bankrupted by faulty algorithms; innocent victims of miscarriages of justice and the unwitting victims of software glitches. We follow stories of investors who have lost fortunes and parents who have lost children, all because of mathematical misunderstandings.

Tim Hartford, How to Make the World Add Up

Tim Harford takes us deep into the world of disinformation and obfuscation, bad research and misplaced motivation to find those priceless jewels of data and analysis that make communicating with numbers so rewarding. Through vivid storytelling he reveals how we can evaluate the claims that surround us with confidence, curiosity and a healthy level of scepticism.

Frances Clegg, Simple Statistics: A course book for the social sciences

A course book covering the mathematics involved in A Level and degree courses in Psychology, Sociology, Economics and Geography.

Leanoard Mlodinow, The Drunkard's Walk

The same tools that help us understand the random paths of molecules can be applied to the randomness that governs so many aspects of our everyday lives, from winning the lottery to road safety, and reveals the truth about the success of sporting heroes and film stars, and even how to make sense of a blood test. The Drunkard's Walk reveals the psychological illusions that prevent us understanding everything from stock-picking to wine-tasting.