



Mathematics Reading List

Byrchall High School · Mathematics Department

Raising aspiration through reading

Year 11

Ages 15–16

KS4 Year 2 — GCSE

Recommended reading for Year 11 — Ages 15–16

84 books selected from the Byrchall Mathematics Reading List

The Joy of x

Popular Maths

Steven Strogatz

A brilliant tour through all of mathematics from counting to calculus, written for the general reader.

Maths on the Back of an Envelope

Estimation

Rob Eastaway

Teaches estimation and number sense in a fun, practical way — relevant for all GCSE students.

Can You Solve My Problems?

Puzzle Book

Alex Bellos

A wide range of puzzles from simple to challenging — builds logical thinking and perseverance.

Maths in 100 Key Breakthroughs

Reference

Richard Elwes

100 key moments in maths history explained accessibly — great as a dip-in reference.

The Maths Book

Reference

DK

A beautifully illustrated chronological journey through 250 mathematical milestones.

Once Upon a Prime

Popular Maths

Sarah Hart

Explores the relationship between mathematics and literature — a unique and endlessly fascinating perspective.

The Penguin Dictionary of Curious an...

Reference

David Wells

Every number catalogued with its interesting properties — a wonderful dip-in reference for any year group.

Do Dice Play God?

Popular Maths

Ian Stewart

Explores probability, uncertainty, and statistics in the real world with Ian Stewart's clarity.

Significant Figures

Biography

Ian Stewart

Short biographies of 25 mathematicians who changed the world — inspiring for older students.

How to Bake Pi

Popular Maths

Eugenia Cheng

Uses recipes and everyday examples to explore abstract mathematical ideas including category theory.

1089 and All That

Popular Maths

David Acheson

A short, brilliant tour of mathematics that captures the excitement of discovery.

The Great Mathematical Problems

Popular Maths

Ian Stewart

Explores the biggest unsolved problems in mathematics with clear, engaging explanations.

The Fascinating World of Graph Theory

Popular Maths

Benjamin, Chartrand & Zhang

An accessible introduction to graph theory with puzzles and real-world applications.

Hidden Figures

Biography

Margot Lee Shetterly

The story of the Black female mathematicians at NASA who helped launch America into space.

Logicomix: An Epic Search for Truth

Graphic Novel

Doxiadis & Papadimitriou

A graphic novel about Bertrand Russell and the foundations of mathematics — stunning.

The Monty Hall Problem

Popular Maths

Jason Rosenhouse

A deep dive into one of the most famous probability puzzles ever devised.

The Maths of Life and Death

Popular Maths

Kit Yates

Explores how maths governs the world around us from disease modelling to criminal justice.

Math Girls

Fiction

Hiroshi Yuki

A Japanese novel following students who solve beautiful mathematical problems together.

Mathematics and the Imagination

Classic Popular Math

Kasner & Newman

A classic introduction to the beauty and scope of mathematics — coined the word 'googol'.

Mathematics for the Million

Classic Popular Math

Lancelot Hogben

A classic self-teaching book from arithmetic to calculus — inspiring and thorough.

Shape: The Hidden Geometry of Inform...

Popular Maths

Jordan Ellenberg

Explores geometry in art, biology, data and everyday life — richly illustrated.

The Signal and the Noise

Statistics

Nate Silver

Why so many predictions fail — a masterclass in probability and statistical thinking.

Weapons of Math Destruction

Technology

Cathy O'Neil

Explores how mathematical models and algorithms can cause harm — critical thinking at its best.

Professor Stewart's Hoard of Mathem...

Puzzle

Ian Stewart

A second cabinet of curiosities — more puzzles, paradoxes and surprising results from Ian Stewart.

Euclid in the Rainforest

Popular Maths

Joseph Mazur

Explores mathematical truth through logic, infinity and probability with engaging storytelling.

The Simpsons and Their Mathematical...

Popular Maths

Simon Singh

Explores the surprising depth of maths hidden in The Simpsons — engaging for older students.

The Wraparound Universe

Cosmology

Jean-Pierre Luminet

Explores the shape of the universe through topology and geometry — mind-expanding.

Logicomix: An Epic Search for Truth (...)

Graphic Novel

Doxiadis & Papadimitriou

Extended edition of the graphic novel about Bertrand Russell — includes additional annotations.

Number: The Language of Science (A...

Classic

Tobias Dantzig

The annotated edition of a classic account of how the concept of number has developed.

How to Think Like a Mathematician

Study Skills

Kevin Houston

Builds mathematical reasoning and proof skills — ideal preparation for A-Level and beyond.

A Mathematician's Apology

Classic Essay

G.H. Hardy

A famous reflection on the beauty of pure mathematics — ideal for high-achieving students.

X + Y: A Mathematician's Manifesto

Popular Maths

Eugenia Cheng

Uses mathematical logic to think about gender and society — thought-provoking.

Hello World

Technology

Hannah Fry

Explores algorithms and AI through a mathematical lens — ideal for students interested in data.

The Norm Chronicles

Popular Maths

Michael Blastland & David Spiegelhalter

Brilliant storytelling around risk, statistics and probability in everyday life.

The Art of Statistics

Statistics

David Spiegelhalter

How to use data and statistics to understand the world — rigorous yet highly readable.

How Not to Be Wrong

Popular Maths

Jordan Ellenberg

Shows how mathematical thinking reveals the truth in everyday life — compelling and accessible.

The Calculus Story

Popular Maths

David Acheson

A short, readable introduction to calculus and its history — perfect pre-A-Level reading.

Mathematics: A Very Short Introduction

Popular Maths

Timothy Gowers

A concise yet deep look at what mathematics really is and why it matters.

The Equation that Couldn't Be Solved

Popular Maths

Mario Livio

The history of symmetry and group theory told through the lives of remarkable mathematicians.

The Music of the Primes

Popular Maths

Marcus du Sautoy

The story of the Riemann Hypothesis and the search for a pattern in prime numbers.

Finding Moonshine

Popular Maths

Marcus du Sautoy

A mathematician's year of discovery exploring symmetry — beautifully written.

Uncle Petros and Goldbach's Conjecture

Fiction

Apostolos Doxiadis

A novel about a mathematician's obsession with one of the greatest unsolved problems.

The Oxford Murders

Fiction

Guillermo Martínez

A mathematical thriller set in Oxford involving logic, sequences and Wittgenstein.

The Drunkard's Walk

Popular Maths

Leonard Mlodinow

How randomness rules our lives — an accessible and eye-opening exploration of probability.

The Man Who Knew Infinity

Biography

Robert Kanigel

The life of Ramanujan, one of the greatest mathematical geniuses who ever lived.

e: The Story of a Number

Popular Maths

Eli Maor

The biography of Euler's number e — its discovery and its role in calculus and analysis.**Euler's Gem**

Popular Maths

David Richeson

The story of Euler's formula $V-E+F=2$ and its connections across topology and geometry.**Alan Turing: The Enigma**

Biography

Andrew Hodges

The definitive biography of Alan Turing, mathematician, codebreaker and computing pioneer.

Thinking Fast and Slow

Psychology

Daniel Kahneman

Explores how humans make decisions — deep connections to probability and rational thinking.

Infinite Powers

Popular Maths

Steven Strogatz

The story of calculus and how it has shaped the modern world — beautifully told.

Closing the Gap

Popular Maths

Vicky Neale

Explains recent breakthroughs in prime number research at an accessible level.

The Universe Speaks in Numbers

Physics

Graham Farmelo

Explores the relationship between mathematics and the laws of physics — ideal for STEM students.

Chaos: Making a New Science

Popular Science

James Gleick

The story of chaos theory and how it revealed hidden order in complex mathematical systems.

The Fractal Geometry of Nature

Popular Maths

Benoit Mandelbrot

The original text on fractals — demanding but awe-inspiring for the most able students.

Love and Math

Autobiography

Edward Frenkel

A Russian mathematician's passionate account of discovering beauty in abstract mathematics.

The Princeton Companion to Mathematics

Reference

Timothy Gowers (ed.)

The most comprehensive guide to modern mathematics — essential for the most able and curious.

The Math(s) Fix

Education

Conrad Wolfram

Argues for a rethink of how maths is taught — for students who wonder why they learn what they do.

Mathematica

Popular Maths

David Bessis

A compelling account of how mathematical intuition works — inspiring for serious students.

The Mathematical Brain

Science

Brian Butterworth

Explores the science of how humans are wired for number and what happens when that goes wrong.

The Colossal Book of Short Puzzles and Problems

Puzzle

Martin Gardner

Gardner's finest shorter puzzles gathered in one volume — logic, geometry, probability and more.

In Code: A Mathematical Journey

Autobiography

Sarah Flannery

Extended account of Sarah Flannery's journey from a Leaving Cert student to cryptographic innovator.

Prime Obsession

Popular Maths

John Derbyshire

A dual narrative interweaving the history of the Riemann Hypothesis with the underlying mathematics.

The Equation that Changed the World

Physics

Harald Fritzsch

How Newton's and Einstein's equations reshaped our understanding of the physical world.

Measurement

Pure Maths

Paul Lockhart

A passionate defence of doing real mathematics — full of beautiful proofs and geometric insight.

The Poincaré Conjecture

Popular Maths

Donal O'Shea

The story of the century's most famous topological problem and the reclusive genius who solved it.

The Riemann Hypothesis

Popular Maths

Karl Sabbagh

An accessible account of one of the greatest unsolved problems in mathematics.

Fermats Room

Fiction

Luis Piedrahita (dir.)

Mathematical thriller fiction — four mathematicians trapped unless they solve puzzles. Gripping and curriculum-linked.

The Housekeeper and the Professor (...)

Fiction

Yoko Ogawa

Study edition of the beautiful Japanese novel — number theory, memory and human connection.

Significant Figures: Lives and Works

Biography

Ian Stewart

Deep-dive edition exploring the lives and mathematics of history's greatest mathematicians.

Mathematics: The Loss of Certainty

History

Morris Kline

A rigorous yet accessible account of how mathematical certainty was questioned through history.

Uncle Petros and Goldbach's Conjecture

Fiction

Apostolos Doxiadis

Annotated edition of the acclaimed novel — ideal for book clubs or individual deeper reading.

The Mathematical Universe

Physics

Max Tegmark

The physicist's argument that mathematics is not just a tool but the actual fabric of reality.

Here's Looking at Euclid (Revised Ed.)

Popular Maths

Alex Bellos

Revised edition of Alex Bellos' world tour of mathematics — updated with new material.

Perfectly Reasonable Deviations from...

Letters

Richard P. Feynman

Feynman's letters — full of mathematical reasoning, curiosity and wisdom about science.

Gödel, Escher, Bach

Philosophy

Douglas Hofstadter

A mind-expanding exploration of logic, recursion, and consciousness — a classic for the most able.

An Imaginary Tale: The Story of $\sqrt{-1}$

Popular Maths

Paul Nahin

The history of the imaginary unit i — rigorous yet readable, perfect for top Year 11 students.

Birth of a Theorem

Autobiography

Cédric Villani

A Fields Medal winner's account of creating mathematics — inspiring for the most talented students.

Proofs from THE BOOK

Pure Maths

Aigner & Ziegler

A collection of the most beautiful mathematical proofs — inspirational for the highest attainers.

The Solitude of Prime Numbers

Literary Fiction

Paolo Giordano

A literary novel where two lonely characters are metaphorically compared to prime numbers.

What Is Mathematics?

Classic Reference

Courant & Robbins

A classic survey of fundamental mathematical ideas — challenging but highly rewarding for top students.

The Poincaré Conjecture (Y11 Ed.)

Popular Maths

Donal O'Shea

Ideal for the most able Year 11 students — the century's most dramatic mathematical story.

Solving Mathematical Problems

Problem Solving

Terence Tao

A concise guide to mathematical problem-solving from one of the greatest mathematicians alive today.

What Is a Number?

Philosophy of Maths

Robert Tubbs

Explores fundamental questions about the nature of numbers — ideal for the most philosophically curious.

The Millennium Problems

Popular Maths

Keith Devlin

Explains the seven Millennium Prize Problems — the greatest unsolved challenges in modern mathematics.