Mathematics A Very Short Introduction Timothy Gowers

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Number Theory OUP Oxford

Quantum Theory is the most revolutionary discovery in physics since Newton. This book gives a lucid, exciting, and accessible account of the surprising and counterintuitive ideas that shape our understanding of the sub-atomic world. It does not disguise the problems of interpretation that still remain unsettled 75 years after the initial discoveries. The main text makes no use of equations, but there is a Mathematical Appendix for those desiring stronger fare. Uncertainty, probabilistic physics, complementarity, the problematic character of measurement, and decoherence are among the many topics discussed. ABOUT THE SERIES: The Very Short Introductions series from Oxford University Press contains hundreds of titles in almost every subject area. These pocket-sized books are the perfect way to get ahead in a new subject quickly. Our expert authors combine facts, analysis, perspective, new ideas, and enthusiasm to make interesting and challenging topics highly readable.

<u>Mathematical Finance</u> Mathematics: A Very Short Introduction Number theory is the branch of mathematics primarily concerned with the counting numbers, especially primes. It dates back to the ancient Greeks, but today it has great practical importance in cryptography, from credit card security to national defence. This book introduces the main areas of number theory, and some of its most interesting problems.

<u>Physics: A Very Short Introduction</u> Oxford University Press Many are familiar with the beauty and ubiquity of fractal forms within nature. Unlike the study of smooth forms such as spheres, fractal geometry describes more familiar shapes and patterns, such as the complex contours of coastlines, the outlines of clouds, and the branching of trees. Our comforting Newtonian ideas of space and

In this Very Short Introduction, Kenneth Falconer looks at the roots of the 'fractal revolution' that occurred in mathematics in the 20th century, presents the 'new geometry' of fractals, explains the basic concepts, and explores the wide range of applications in science, and in aspects of economics. This is essential introductory reading for students of mathematics and science, and those interested in popular science and mathematics. ABOUT THE SERIES: The Very Short Introductions series from Oxford University Press contains hundreds of titles in almost every subject area. These pocket-sized books are the perfect way to get ahead in a new subject quickly. Our expert authors combine facts, analysis, perspective, new ideas, and enthusiasm to make interesting and challenging topics highly readable.

Infinity OUP Oxford

In this Very Short Introduction, Jacqueline Stedall explores the rich historical and cultural diversity of mathematical endeavour from the distant past to the present day, using illustrative case studies drawn from a range of times and places; including early imperial China, the medieval Islamic world, and nineteenth-century Britain.

Quantum Theory: A Very Short Introduction Oxford University Press

100 years ago, Einstein's theory of relativity shattered the world of physics.

time were replaced by bizarre and counterintuitive conclusions: if you move at high speed, time slows down, space squashes up and you get heavier; travel fast enough and you could weigh as much as a jumbo jet, be squashed thinner than a CD without feeling a thing - and live for ever. And that was just the Special Theory. With the General Theory came even stranger ideas of understanding of gravity and the cosmos. This authoritative and entertaining Very Short Introduction makes the theory of relativity accessible and understandable. Using very little mathematics, Russell Stannard explains the important concepts of relativity, from E=mc2 to black holes, and explores the theory's impact on science and on our understanding of the universe. ABOUT THE SERIES: The Very Short Introductions series from Oxford University Press contains hundreds of titles in almost every subject area. These pocket-sized books are the perfect way to get ahead in a new subject quickly. Our expert authors combine facts, analysis, perspective, new ideas, and enthusiasm to make interesting and

challenging topics highly readable. Navigation Oxford University Press

How is a subway map different from other maps? What makes a knot knotted? What makes the Mbius strip one-sided? These are questions of topology, the mathematical study of properties preserved by twisting or stretching objects. In the 20th century topology became as broad and fundamental as algebra and geometry, with important implications for science, especially physics. In this Very Short Introduction Richard Earl gives a sense of the more visual elements of topology (looking at surfaces) as well as covering the formal definition of continuity. Considering some of the eye-opening examples that led mathematicians to recognize a need for studying topology, he pays homage to the historical people, problems, and surprises that have propelled the growth of this field. ABOUT THE SERIES: The Very Short Introductions series from Oxford University Press contains hundreds of titles in almost every subject area. These pocket-sized books are the perfect way to get ahead in a new subject quickly. Our expert authors combine facts, analysis, perspective, new ideas, and enthusiasm to make interesting and challenging topics highly readable.

<u>The History of Mathematics: A Very Short</u> <u>Introduction</u> Oxford University Press Introduction; 1 The information revolution; 2 The language of information; 3 Mathematical information; 4 Semantic information; 5 Physical information; 6
Biological information; 7 Economic
information; 8 The ethics of information;
Conclusion; References.

Symmetry: A Very Short Introduction OUP Oxford

An exploration of the concept of "nothing" journeys from ancient ideas and cultural traditions to the latest scientific research, discussing the history of the vacuum, theories on the nature of time and space, and other discoveries.

<u>Chaos: A Very Short Introduction</u> Oxford University Press

Infinity is an intriguing topic, with connections to religion, philosophy, metaphysics, logic, and physics as well as mathematics. Its history goes back to ancient times, with especially important contributions from Euclid, Aristotle, Eudoxus, and Archimedes. The infinitely large (infinite) isintimately related to the infinitely small (infinitesimal). Cosmologists consider sweeping questions about whether space and time are infinite. Philosophers and mathematicians ranging from Zeno to Russell have posed numerous paradoxes about infinity and infinitesimals. Many vital areas ofmathematics rest upon some version of infinity. The most obvious, and the first context in which major new techniques depended on formulating infinite processes, is calculus. But there are many others, for example Fourier analysis and fractals. In this Very Short Introduction, Ian Stewart discusses infinity in mathematics while also drawing in the various other aspects of infinity and explaining some of the major problems and insights arising from this concept. He argues that working with infinity is not just Introductions series from Oxford University Press an abstract, intellectual exercise but that it is contains hundreds of titles in almost every subject instead a concept with important practical everyday applications, and considers how mathematicians use infinity and infinitesimals to answer questions or supply techniques that do ideas, and enthusiasm to make interesting and not appear to involve the infinite.ABOUT THE SERIES: The Very Short Introductions series from Oxford University Press contains hundreds of titles in almost every subject area. These pocket-sized books are the perfect way to get ahead in a new subject quickly. Our expert authors combine facts, analysis, perspective, new ideas, andenthusiasm to make interesting and The study of geometry is at least 2500 years challenging topics highly readable. Fractals: A Very Short Introduction Oxford University Press, USA Mathematics is a fundamental human activity that

can be practised and understood in a multitude of ways; indeed, mathematical ideas themselves are far from being fixed, but are adapted and changed by their passage across periods and cultures. In this

Very Short Introduction, Jacqueline Stedall explores the rich historical and cultural diversity of mathematical endeavour from the distant past to the present day. Arranged thematically, to exemplify the varied contexts in which people have learned, used, and handed on mathematics, she also includes illustrative case studies drawn from a range of times and places, including early imperial China, the medieval Islamic world, and nineteenth-century Britain. ABOUT THE SERIES: The Very Short area. These pocket-sized books are the perfect way to get ahead in a new subject quickly. Our expert authors combine facts, analysis, perspective, new challenging topics highly readable.

Numbers: A Very Short Introduction Oxford University Press

Mathematics: A Very Short IntroductionOxford Paperbacks

Stars: A Very Short Introduction Oxford University Press

old, and it is within this field that the concept of mathematical proof - deductive reasoning from a set of axioms - first arose. To this day geometry remains a very active area of research in mathematics. This Very Short Introduction covers the areas of mathematics falling under geometry, starting with topics such as Euclidean and non-Euclidean geometries, and ranging to curved spaces, projective geometry in Renaissance art, and geometry of space-time inside a black hole. Starting from the basics, Maciej Dunajski proceeds from concrete examples (of mathematical objects like Platonic solids, or theorems like the Pythagorean theorem) to general principles. Throughout, he outlines the role geometry plays in the broader context of science and art.Very Short Introductions: Brilliant, Sharp, InspiringABOUT THE SERIES: The Very Short Introductions series from Oxford University Press contains hundreds of titles in almost every subject area. These pocket-sized books are the perfect way to get ahead in a new subject quickly. Our expert authors combine facts, analysis, perspective, new ideas, andenthusiasm to make interesting and challenging topics highly readable. Design: A Very Short Introduction OUP Oxford Applied mathematics plays a role in many different fields, especially the sciences and engineering. Goriely explains its nature and its relationship to pure mathematics, and through a variety of applications - such as mathematical modelling to predict the effects of climate change - he illustrates its power in tackling very practical

problems.

The History of Mathematics: A Very Short Introduction OUP Oxford Starting with an examination of how historians work, this "Very Short Introduction" aims to explore history in a general, pithy, and accessible manner, rather than to delve into specific periods. Nothing: A Very Short Introduction Oxford University Press Newton's contributions to an understanding of the heavens and the earth are considered to be unparalleled. This very short introduction explains his scientific theories, and uses Newton's unpublished writings to paint a

Newton's unpublished writings to paint a picture of an extremely complex man whose beliefs had a huge impact on Europe's political, intellectual, and religious landscape.

Symmetry: A Very Short Introduction OUP Oxford

Offers a wealth of insight into the paradoxical nature of film, considering its role and impact on society in the 20th century as well as its future in the digital age. Original.

<u>Algebra: A Very Short Introduction</u> Oxford University Press

Discusses the basic components of computers; how increasingly miniature parts have led to products, applications, and networks that solve problems; the

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issues that increased connectivity has produced; and include topics such as graph theory, partitions some of the emerging technologies in the field. Topology Oxford University Press

sea, Jim Bennett discusses the scientific and technological developments that have enabled the accurate measurement of position and setting of directions in the oceans. Geometry: a Very Short Introduction Oxford Paperbacks

This introduction invites readers to revisit algebra and appreciate the elegance and power of equations and inequalities. Offering a clear explanation of algebra through theory and example, Higgins shows how equations lead to complex numbers, matrices, groups, rings, and fields.--

Measurement: A Very Short Introduction Oxford University Press

How many possible sudoku puzzles are there? In the lottery, what is the chance that two winning balls have consecutive numbers? Who invented Pascal's triangle? (it was not Pascal) Combinatorics, the branch of mathematics concerned with selecting, arranging, and listing or counting collections of objects, works to answer all these questions. Dating back some 3000 years, and initially consisting mainly of the study of permutations and combinations, its scope has broadened to

of numbers, block designs, design of codes, and latin squares. In this Very Short Introduction Looking at the long history of navigation at Robin Wilson gives an overview of the field and its applications in mathematics and computer theory, considering problems from the shortest routes covering certain stops to the minimum number of colours needed to colour a map with different colours for neighbouring countries. ABOUT THE SERIES: The Very Short Introductions series from Oxford University Press contains hundreds of titles in almost every subject area. These pocket-sized books are the perfect way to get ahead in a new subject quickly. Our expert authors combine facts, analysis, perspective, new ideas, and enthusiasm to make interesting and challenging topics highly readable.