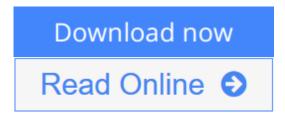# Arithmetics (Universitext)

By Marc Hindry

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Number theory is a branch of mathematics which draws its vitality from a rich historical background. It is also traditionally nourished through interactions with other areas of research, such as algebra, algebraic geometry, topology, complex analysis and harmonic analysis. More recently, it has made a spectacular appearance in the field of theoretical computer science and in questions of communication, cryptography and error-correcting codes. Providing an elementary introduction to the central topics in number theory, this book spans multiple areas of research. The first part corresponds to an advanced undergraduate course. All of the statements given in this part are of course accompanied by their proofs, with perhaps the exception of some results appearing at the end of the chapters. A copious list of exercises, of varying difficulty, are also included here. The second part is of a higher level and is relevant for the first year of graduate school. It contains an introduction to elliptic curves and a chapter entitled "Developments and Open Problems", which introduces and brings together various themes oriented toward ongoing mathematical research. Given the multifaceted nature of number theory, the primary aims of this book are to: - provide an overview of the various forms of mathematics useful for studying numbers - demonstrate the necessity of deep and classical themes such as Gauss sums - highlight the role that arithmetic plays in modern applied mathematics - include recent proofs such as the polynomial primality algorithm - approach subjects of contemporary research such as elliptic curves - illustrate the beauty of arithmetic The prerequisites for this text are undergraduate level algebra and a little topology of Rn. It will be of use to undergraduates, graduates and phd students, and may also appeal to professional mathematicians as a reference text.

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Arithmetics (Universitext) By Marc Hindry Bibliography

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- Format: Kindle eBook

Editorial Review

Review

From the reviews:

"It gives an overview of various parts of number theory which should be studied after its basics have been mastered. … This book is extremely well written and a pleasure to read. It is well suited to whet a curious student's appetite and to induce him or her to embark on an in-depth study of number theory." (Ch. Baxa, Monatshefte für Mathematik, 2014)

"This is a detailed presentation of modern number theory, complete with overviews of current research problems. … Hindry (Univ. Paris 7, France) includes the standard topics in undergraduate number theory courses … . Summing Up: Recommended. Upper-division undergraduates through researchers/faculty." (J. Johnson, Choice, Vol. 49 (6), February, 2012)

"Geared toward graduate students at the masters level (M1 and M2), the book provides a thorough and lively introduction to various fundamental aspects of both classical and contemporary arithmetical theories, together with some of their most important applications and current research developments. … the book under review is both an excellent introduction and a truly irresistible invitation to number theory in its various fascinating aspects. … Its current translation into English will certainly augment both the worldwide popularity and usefulness of this remarkable textbook." (Werner Kleinert, Zentralblatt MATH, Vol. 1233, 2012)

"This is a very modern text for a second course in number theory, slanted towards algebraic number theory and Diophantine equations, and using the language and concepts of abstract algebra throughout. … The book attempts, usually successfully, to cover not only modern methods but the most recent results as well. … The exercises are especially good, and supplement the exposition with a number of important results." (Allen Stenger, The Mathematical Association of America, October, 2011)

From the Back Cover

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