1. Record Nr. UNINA9910460462103321 Autore Stewart Ian <1945-> Titolo The foundations of mathematics / / Ian Stewart and David Tall Pubbl/distr/stampa New York, New York:,: Oxford University Press,, 2015 ©2015 **ISBN** 0-19-870644-8 0-19-101647-0 [Second edition.] Edizione Descrizione fisica 1 online resource (409 p.) 510 Disciplina Soggetti Mathematics Logic, Symbolic and mathematical Electronic books. Lingua di pubblicazione Inglese **Formato** Materiale a stampa Livello bibliografico Monografia Note generali Description based upon print version of record. Nota di bibliografia Includes bibliographical references and index. ""Cover ""; ""Preface to the Second Edition""; ""Preface to the First Nota di contenuto Edition""; ""Contents""; ""Part I The Intuitive Background""; ""1 Mathematical Thinking"; ""2 Number Systems"; ""Part II The Beginnings of Formalisation""; ""3 Sets""; ""4 Relations""; ""5 Functions""; ""6 Mathematical Logic""; ""7 Mathematical Proof""; ""Part III The Development of Axiomatic Systems"": ""8 Natural Numbers and Proof by Induction""; ""9 Real Numbers""; ""10 Real Numbers as a Complete Ordered Field""; ""11 Complex Numbers and Beyond""; ""Part IV Using Axiomatic Systems"" ""12 Axiomatic Systems, Structure Theorems, and Flexible Thinking""" 13 Permutations and Groups""; ""14 Cardinal Numbers""; ""15 Infinitesimals""; ""Part V Strengthening the Foundations""; ""16 Axioms for Set Theory""; "" Appendixa€? How to Read Proofs: The 'Self-Explanation' Strategy"; "" References and Further Reading""; "" Index"" Sommario/riassunto The transition from school mathematics to university mathematics is seldom straightforward. Students are faced with a disconnect between the algorithmic and informal attitude to mathematics at school, versus a new emphasis on proof, based on logic, and a more abstract development of general concepts, based on set theory. The authors have many years' experience of the potential difficulties involved,

through teaching first-year undergraduates and researching the ways in which students and mathematicians think. The book explains the motivation behind abstract foundational material based on stude