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Nota di contenuto	1. Mathematical reasoning: the learner, the teacher, the teaching and learning -- 2. Number sense and flexibility of calculation: a common focus on number relations -- 3. Number sense in a developmental perspective: comparing the mastery of its different components in children -- 4. Mental and neural foundations of numerical magnitude -- 5. Strategies and accuracy in the number line task in Colombian and Brazilian deaf children -- 6. 1, 2, 3... Let’s count: The development of counting at the beginning of compulsory schooling -- 7. How do Kindergarten children deal with possibilities in combinatorial problems? -- 8. A Kindergarten student’s uses and understandings of tables while working with function problems -- 9. Performance and strategies used by Elementary School 5th graders when solving problems involving functional reasoning -- 10. Contributions of digital technologies to the development of algebra-ic thinking at school -- 11. How teachers deal

with students’ mathematical reasoning when promoting whole-class discussion during the teaching of algebra -- 12. The posing of mathematical problems by university students of mathematics -- 13. What do low-educated adults and children think about the uses of mathematics?.

Sommario/riassunto

This book adopts an interdisciplinary approach to investigate the development of mathematical reasoning in both children and adults and to show how understanding the learner’s cognitive processes can help teachers develop better strategies to teach mathematics. This contributed volume departs from the interdisciplinary field of psychology of mathematics education and brings together contributions by researchers from different fields and disciplines, such as cognitive psychology, neuroscience and mathematics education. The chapters are presented in the light of the three instances that permeate the entire book: the learner, the teacher, and the teaching and learning process. Some of the chapters analyse the didactic challenges that teachers face in the classroom, such as how to interpret students' reasoning, the use of digital technologies, and their knowledge about mathematics. Other chapters examine students' opinions about mathematics, and others analyse the ways in which students solve situations that involve basic and complex mathematical concepts. The approaches adopted in the description and interpretation of the data obtained in the studies documented in this book point out the limits, the development, and the possibilities of students' thinking, and present didactic and cognitive perspectives to the learning scenarios in different school settings. Mathematical Reasoning of Children and Adults: Teaching and Learning from an Interdisciplinary Perspective will be a valuable resource for both mathematics teachers and researchers studying the development of mathematical reasoning in different fields, such as mathematics education, educational psychology, cognitive psychology, and developmental psychology.