1. Record Nr. UNINA9910349320803321

Titolo	Interdisciplinary Perspectives on Math Cognition / / edited by Marcel Danesi
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2019
ISBN	3-030-22537-2
Edizione	[1st ed. 2019.]
Descrizione fisica	1 online resource (VIII, 344 p. 105 illus., 4 illus. in color.)
Collana	Mathematics in Mind, , 2522-5405
Disciplina	519
Soggetti	Neural networks (Computer science) Neurosciences Mathematics—Study and teaching Mathematical Models of Cognitive Processes and Neural Networks Mathematics Education
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	1. From Biological Brain to Mathematical Mind: The Long-Term Evolution of Mathematical Thinking (D. Tall) -- 2. Compression and Decompression in Mathematics (M. Turner) -- 3. How Technology Has Changed What It Means to Think Mathematically (K. Devlin) -- 4. Machine vs. Structure of Language Via Statistical Universals (K. Tanaka-Ishii) -- 5. Number Work: Recovering the Original Complexity of Learning Arithmetic (B. Davis) -- 6. The Body of/in Proof: An Embodied Analysis of Mathematical Reasoning (L. Edwards) -- 7. Math Puzzles and Learning Devices (M. Danesi) -- 8. Diagrams in Mathematics: On Visual Experience in Peirce (V. Kiryushchenko) -- 9. Laws of Form, Peirce and Cantor (L. Kauffman) -- 10. The Topology of Mathematics in the Mind and its Interaction with Verbal and Written Language (R.K. Logan, I.P. Oldenhoff) -- 11. Mathematical Fiction as an Interdisciplinary Source for Mathematics Courses: Resources and Recommendations (F. Nuessel) -- 12. Science, Magic, and the In-Between: Whence Logic (I. Semetsky) -- 13. Geometric Cognition (W. Whiteley) -- 14. Using Evidence to Close the Achievement Gap in Math (J. Mighton) -- 15. Knowledge Building, Mathematics and Creative Thinking: An Overview on Ontario Elementary Mathematical Teaching

Beyond 21st Century Skills (S. Costa) -- 16. Crypto-Mathematics in Ethnography: Estimation and Approximation via Ballparks adn Eyeballing (M. Anderson) -- 17. A Mathematician, A Physicist and an Engineer: The Meaning of "M" in Stem (D. Martinovic) -- 18. Why a Duck? A Three-Part Essay on the Mathematics of Cognition (Y. Neuman) -- 19. On Mathematical Ways of Knowing: Ramblings of a Humanistic Mathematician (G. Karaali) -- 20. Epilogue: So What is Math Cognition? (M. Danesi).

Sommario/riassunto

This is an anthology of contemporary studies from various disciplinary perspectives written by some of the world's most renowned experts in each of the areas of mathematics, neuroscience, psychology, linguistics, semiotics, education, and more. Its purpose is not to add merely to the accumulation of studies, but to show that math cognition is best approached from various disciplinary angles, with the goal of broadening the general understanding of mathematical cognition through the different theoretical threads that can be woven into an overall understanding. This volume will be of interest to mathematicians, cognitive scientists, educators of mathematics, philosophers of mathematics, semioticians, psychologists, linguists, anthropologists, and all other kinds of scholars who are interested in the nature, origin, and development of mathematical cognition. .