BOOK REVIEWS

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The Joy of x: A Guided Tour of Math, from One to Infinity by Steven Strogatz
Eamon Dolan/Houghton Mifflin Harcourt, 2013
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Type the letter 'x' in Google and you learn that in mathematics 'x' is commonly used as the name for an independent variable or unknown value and that the modern tradition of using x to represent an unknown was started by René Descartes in '*La Géométrie*' (1637). Many high school students find it difficult to understand its use for an unknown quantity in a simple arithmetical problem; the ensuing frustration is often the cause of their subsequent apathy towards mathematics.

The Cornell University mathematician Steven Strogatz is well known for his popular articles concerning the beauty and fun of mathematical topics. Each chapter of the present book offers an "Aha!" moment, starting with why numbers are so helpful and progressing through the wondrous truths implicit in topics concerning π, the Pythagorean theorem, irrational numbers, fat tails, even the rigours and surprising charms of calculus. For example, he explains how Michael Jordan's high jump dunks can help explain the fundamentals of calculus. He discusses topics which concern some of life's mysteries such as: Did O.J. do it?; How can one flip a mattress to get the maximum wear out of it and thereby learn some group theory?; How many people should one date before settling down?; and Why are some infinities bigger than others? The only prerequisites that are needed to read this book are curiosity and common sense. The 'joy' of the title is found through his clear, ingenious and often funny explanations of the most vital and exciting principles of mathematical topics.

The thirty chapters of the book are divided into six parts: Numbers, Relationships, Shapes, Change, Data and Frontiers. Part 1, *Numbers* deals with kindergarten and grade-school arithmetic, stressing how helpful numbers can be and how uncannily effective they are in describing the world. Part 2, *Relationships* generalizes from working with numbers to working with relationships between numbers. Part 3, *Shapes* deals with geometry and trigonometry and introduces new levels of rigour through logic and proof. Part 4, *Change* explains the role of infinity in Calculus. Part 5, *Data* is concerned with probability, statistics, networks and data mining. With the right kinds of math and the rights kinds of data, it is shown how to pull meaning from maelstrom. Finally, Part 6, *Frontiers* discusses the edge of mathematical knowledge, the borderland between what's known and what remains elusive, under the headings: The Loneliest Numbers; Group Think; Twist & Shout; Think Globally; Analyze This! (infinite series); and The Hilbert Hotel.

If anyone tells you "I hate math" ask that person to read this book; that opinion will get revised!