

BOOK REVIEWS

John Grant McLoughlin

Probability Games

by Ivan Moscovich, published by Thomas Allen & Son Limited, 2000
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Pattern Games

by Ivan Moscovich, published by Thomas Allen & Son Limited, 2001
ISBN 0-7611-2020-3, hardcover, full colour throughout, 24 pages, CDN\$10.95
Reviewed by **Tegan Butler**, Student, Faculty of Education, University of
New Brunswick, Fredericton, New Brunswick.

With interactive and colourful covers, Ivan Moscovich's *Probability Games* and *Pattern Games* are sure to be hits with persons of all ages. Without even opening *Probability Games*, the reader is faced with an array of kaleidoscopic octagons awaiting to be turned. The task is to match the facing sides of all nine octagons with matching colors. The particular octagon one chooses to begin with determines the time spent achieving the single correct answer. *Pattern Games* provides an equally inviting and intriguing puzzle on the front cover. Also manipulative, this puzzle consists of an 8×8 chessboard with mobile queens. Whether playing with a friend or solo, the idea is to move alternating queens to positions in which each queen is the sole proprietor of that line, be it a row, column or diagonal.

Probability Games kicks off with basic probability concepts, those being permutations, combinations and factorials (all of which the author defines). Further along, the tasks become more perceptual and require more insight. Take the example, "Flip Fraud" (page 10). This takes place at the Hy-Lee Improbable Auction House, where an auctioneer is asking for bids on two charts depicting coin toss outcomes recorded by the one and only 'Thumbs' McDougall. The auctioneer, however, is interrupted by a math teacher who exclaims that one of the charts is a fake! The challenge posed to the reader is to determine why the teacher stated this simply by looking at the two charts.

Pattern Games invites the reader to discover number sequences, identify geometric patterns, decipher codes, and play with optical illusions. Written in a style similar to *Probability Games*, this book also presents the assignments with an air that permits readers to forget that they are even doing mathematics! Consider the puzzle, "Goblins' Getaway" (page 10), in which Fannie has fallen into an underground hideaway inhabited by goblins. In order for Fannie to escape she must pass through all 39 caves without retracing her steps. In a subsequent problem, "Party All Night" (page 11), the toys at Gepetto's Toy Store have played the entire night away. Hurrying to their places on the shelves, they have consequently knocked over their price tags. Arrangements of horses, balls, clowns, horns, and airplanes are illustrated with their total sums provided in all but the final row and column. The reader's assignment is to determine the price of each toy.

Moscovich has organized both books extremely well. Particularly in *Pattern Games*, he has made sure that similar problems (for example, geometric patterns, Pythagorean Theorem) follow a logical sequence. He makes a solid effort and succeeds in relating the problems to everyday encounters in an exciting and enthusiastic way. From Dippity Dan's Ice Cream Parlor in *Probability Games*, in which the reader must figure out the number of three-scoop ice cream possibilities with ten different flavours, to Mrs. Perkins' quilts in *Pattern Games*, where perfect and imperfect squares are linked to quilting, each mathematical proposition exemplifies an incident easily transferable to actual contexts.

Moscovich provides complete solutions that are easily understood and accompanied with appropriate diagrams and illustrations. The delightful illustrations are plentiful throughout and add a nice charm to these wonderful books. Recommended for kids aged eight and above, people of all ages are encouraged to accept Moscovich's invitation to participate in his mathematical challenges.

Mesmerizing Math Puzzles

by Rodolfo Kurchan, published by Sterling Publishing Co., 2000
ISBN 0-8069-3709-2, softcover, 94 pages, CDN\$9.95

Reviewed by **John Grant McLoughlin**, University of New Brunswick, Fredericton, NB.

Kurchan's enthusiasm for mathematical puzzling is evident throughout this entertaining collection of 93 problems. The problems are divided into seven chapters: *Numbers*; *Sequences*; *Coded Sums*; *Digits*; *Figures to be Divided*; *Pentominoes*; and *Miscellaneous*. The chapter entitled *Numbers* deals with a range of topics including primes, number properties, divisibility, and logic problems involving natural numbers. For example, one problem arises from the introduction of a novel numerical property, namely, numbers with "exact endings". Numbers such as 512 and 819 have exact endings, since they are each multiples of their final digit. That is, 512 divided by 2 and 819 divided by 9 both leave no remainder. Kurchan identifies 637284591 as a number that uses all digits 1 through 9 once in such an order that each group of three consecutive digits forms a number with an exact ending. He proceeds to offer the challenge: "What is the highest number using nine digits and no repeats that meets this condition?"

In contrast to the opening chapter, *Digits* is almost exclusively devoted to various figures that require proper placement of digits into given spaces to satisfy a range of criteria. *Coded Sums* refer to alphametics where digits must be substituted for letters. *Sequences* features several questions in which the reader is to identify the next term in a sequence. This chapter, in my opinion, is much less interesting than those that surround it. The cover identifies the book as an official Mensa publication. Such publications tend to

emphasize such patterning problems. Fortunately the weight of this chapter is overshadowed by the quantity and quality of the remaining content. The two geometric chapters, *Figures to be Divided* and *Pentominoes*, rely heavily upon cutting and tiling problems, respectively.

The final chapter, *Miscellaneous*, draws upon game contexts as sources of challenges. “Hopscotch on Prime Numbers” is one such game that struck me as being creative and playful. The challenge is to create a patio using consecutively numbered tiles such that it is possible to hop from the first row to the final row by a sequence of prime numbered tiles. Each hop must proceed to the next row and land upon a neighbouring tile. Consider the figure below with tiles numbered 1 to 30 on a patio having a width of 5 units. It would be possible to hop from 2 to 7 to 13 to 19 to 23 to 29, thus creating a path from the first to last row. Note that diagonal hops are permitted.

1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20
21	22	23	24	25
26	27	28	29	30

Suppose that there were 32 tiles rather than 30. This would require placing 31 and 32 in the final row (or altering the width of the patio). The final row may have less tiles. Completion of a path would become impossible because it would be necessary to get to 31, a tile accessible only from 26 or 27—neither of which is prime. Kurchan challenges solvers to find the minimal width (number of columns) that will allow one to hop from the first row to the final row using tiles numbered from 1 to 100.

Kurchan has created a delightful set of challenges that is well organized. The inclusion of solutions and a glossary (with select definitions and tables of perfect squares and primes) add to the value of the resource. Overall, I highly recommend this affordable book as a source of mathematical challenge and enjoyment for interested students, teachers, and armchair puzzlers.