

## BOOK REVIEW

John Grant McLoughlin

*TriMathlon: A Workout Beyond the School Curriculum*

by Judith D. Sally and Paul J. Sally, Jr., published by AK Peters, 2003

ISBN 1-56881-184-5, soft cover, 200 pages, US\$30.00.

Reviewed by **Anne Izydorczak**, University at Buffalo, Amherst, NY, USA.

In each of the ten chapters of this book, the authors introduce a mathematical situation or game. Through a series of questions and challenges followed by explanation and instruction, they gradually build toward representations, generalizations, and proofs. Students are instructed to “Pause, take time to think and to work on your own” after each question or challenge. Solutions to the questions and challenges are given in the text.

*TriMathlon* is divided into three areas of mathematics: arithmetic, numbers and symmetry, and geometry. In the chapter, “Lattice Polygons”, students begin by attempting to make various types of polygons on a lattice. They work toward guessing and then proving Pick’s Theorem. Using Pick’s Theorem, they try to make shapes with specified areas. The investigation then focuses on which areas can be areas of lattice squares. This leads to a generalization and finally a proof. In the “Heavy Lifting” section at the end of the chapter, students explore equilateral triangles and prove that none can be constructed in a lattice. Some of the other explorations are palindromes, the four numbers game, circle packing in a plane, and dissection.

The book’s athletic analogy is clever, but the athletic icons used throughout the book confused me at first. The section titles of run, swim, and bike do not convey much about the content of the sections. I did appreciate the personal, enthusiastic, playful tone of the book. I had the feeling that the authors were talking to me and working with me.

It is not clear for what level of student this book is intended. The authors vaguely recommend it for “young students”. At first glance, the problems would seem to require some algebraic sophistication. However, they provide a meaningful context for learning algebra. The teacher can help fill in the gaps along the way. The problem contexts are likely to be motivational for students in high school or college mathematics classes, or even for prospective mathematics teachers. I would enjoy teaching from this book as a college elective.

I did find some difficulty with chapter 10, in which students do geometric constructions. In my experience, even college students have trouble with the most basic constructions. It might be better to adapt this chapter to use with a geometric software program.

This book offers a fresh approach to learning mathematics. Even the few explorations that were familiar to me went in unfamiliar directions. The book’s format does more than actively involve the reader. It puts the onus for doing the mathematics on the reader. A student who works through this book will understand what it truly means to do mathematics.