

The Language of Mathematics: Making the Invisible Visible.
By Keith Devlin. W. H. Freeman and Company, 1998

Reviewed by Charles R. Hampton, The College of Wooster

This book illustrates a strategy for writing and publishing perhaps best exemplified by Serge Lang. One writes k books and publishes n books where $n > k$. Devlin's earlier volume *Mathematics: The Science of Patterns* was part of the Scientific American Library series and was directed at a scientifically literate audience. The current volume is directed at a more general audience and is not printed on high gloss paper with copious color illustrations. It does contain a modest number of color plates taken from the earlier volume

For each chapter below I have included a sample topic list to give a sense of the content of Devlin's book.

1. Natural Numbers (counting, number Theory, induction, Fermat's Last Theorem introduced)
2. Proof (Aristotle, predicate calculus, set theory, Godel's work, linguistics)
3. Calculus (tangents, quadrature, the Real numbers, the complex numbers, Riemann's Hypothesis)
4. Geometry (Platonic solids, conics, non-Euclidean geometry)
5. Symmetry (groups of symmetries, Galois groups, sphere packing, wallpaper patterns, tilings)
6. Topology (networks, Euler's formula, surfaces characteristics, Poincare's conjecture, knots, Fermat's Last Theorem resolved)
7. Probability (gambling, the bell curve, conditional probability, Black-Scholes formula)
8. Applied Math (Kepler, Newton, Maxwell, Einstein, space-time geometry, manifolds, string theory)

It is clear from this list that the range of topics is enormous but given the audience none are dealt with in depth.

Now for my comments on this book. This is Devlin's earlier book with two additional chapters (7 and 8). The rewrite of the common material is of the $\epsilon - \delta$ variety, i.e. hardly perceptible. None of the changes are made in order to reach a different audience. The new volume is still a very slow read for a general reader. I don't believe that this is a successful revision of the earlier work.

In the chapter on calculus I found two serious flaws. The first is a bad misprint from the earlier edition of a differential equation and its solution. The second is an assumption, in both volumes during a discussion of the Fundamental Theorem of Calculus, that a definition of the derivative had been given earlier when it had not. What should have been made quite plausible is thus very mysterious.

The Language of Mathematics might make a good gift for a bright high school student who had some interest in mathematics, but even then I would prefer the first volume, *Mathematics: The Science of Patterns*. The first book is much more visually attractive and is even less expensive in the paper bound edition from our friends at Amazon.com.