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Micro-Maths

**Mathematical problems and theorems
to consider and solve on a computer**

Keith Devlin

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MACMILLAN

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About this book

All of the articles and problems in this book first appeared in *The Guardian* newspaper during the years 1983 and 1984, though in many cases I have extended the necessarily brief accounts originally given, and on some occasions I have amalgamated two articles into one chapter.

As with my *Guardian* column, there is no particular connection between one chapter and the next. By and large, you should be able to pick up the book and delve into it at random. There is no overall theme, save that everything concerns computing and mathematics. The choice of the items chosen was a simple one: I write about whatever I find fun and of interest. If your favourite topic is not here, drop me a line and tell me about it, and I will see if I can include it in a future column (or even a future edition of this book).

Lancaster University
August 1984

Keith Devlin

Acknowledgements

The book is dedicated to my two editors at *The Guardian*, Tim Radford and Anthony Tucker, for giving me the opportunity to spout off to an audience somewhat larger than the one usually provided for me. Is there another national daily newspaper in the world which would devote a regular column to mathematics?

About the author

Dr Keith Devlin is Reader in Mathematics at The University of Lancaster. Since the spring of 1983 he has written occasional articles on mathematics and computing in *The Guardian* newspaper, and has contributed a regular, fortnightly column to the computer page (*Microguardian*) since it began in the autumn of 1983.

In addition to this book, he has written half a dozen other mathematics books, most of them dry old textbooks destined to accumulate dust in obscure corners of university libraries.

Confirming the popular impression that you have to be a masochist to enjoy mathematics, his main interest outside of the subject is fell-running, an interest not shared by his wife and two children, who are content to merely *look* at the fells from their house in the Lune Valley in Lancashire.

The first problem

100 Sums

If you take the digits 1 to 9 in order, there are exactly 11 ways in which you can insert plus and minus signs to give a sum with answer 100. One of these is

$$123 - 45 - 67 + 89 = 100$$

Find the other 10.

This problem is a good one for computer attack, though the patient among you could presumably get it out using nothing more high-tech than paper and a pencil.