IN DISCRETE MATHEMATICS

Using Discrete Mathematics in the Classroom

Issue #4 *June 1994*

Speaking discretely...

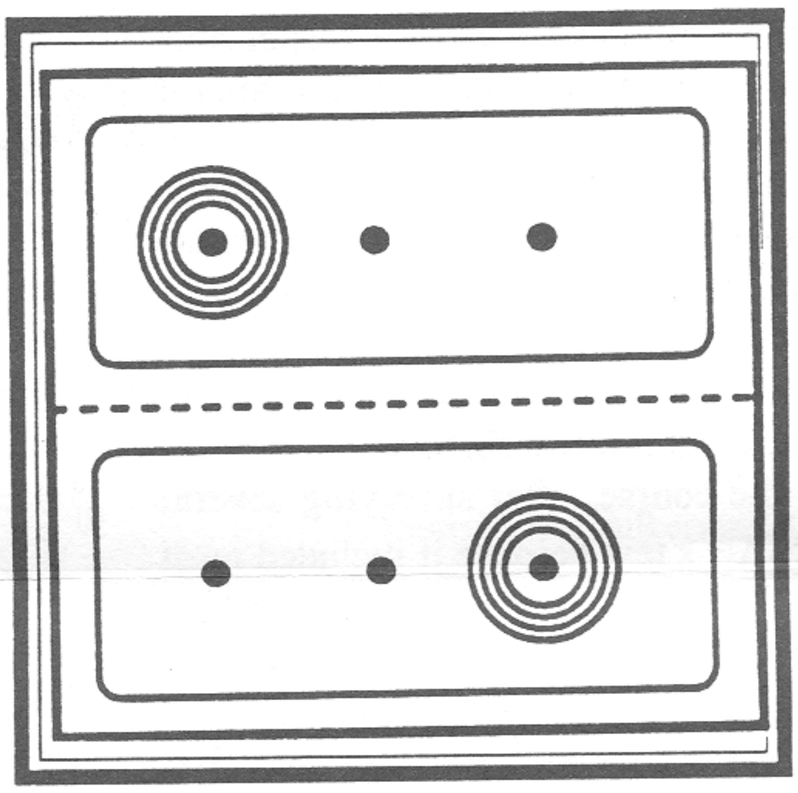
by Deborah S. Franzblau

This is the fourth issue of the Newsletter, and my first as your new editor. I hope you will shower me with your contributions: articles on classroom activities, outlines for new courses, book reviews, reports on software, cartoons, bibliographies...

In this issue, you will find several excellent teaching ideas from participants in the Rutgers Leadership Program in Discrete Mathematics. All of these address the question "How can I use Discrete Mathematics Topics in Algebra or Basic Mathematics?", and require only simple materials like maps (p. 4), junk mail (p. 5), or old boards (p.7), along with a bit of imagination.

Also featured are two articles by participants who have played important roles in developing new discrete mathematics curricula: Lina Bowyer in Tennessee, and Susan Picker in New York City (p.2). Joseph Malkevitch takes a look at the history of mathematics courses for liberal arts students, and the new role of discrete mathematics in such courses. This issue also features a special section on news from DIMACS, with an article on a breakthrough on the Traveling Salesperson Problem by researchers here last summer (p.3).

We are again including information on the program "Workshops in Your District," one-day workshops given by Leadership Program participants (p. 11). Feel free to copy this page to use as a flyer to give to colleagues and distribute at conferences.



In This Issue

Discrete Mathematics for Liberal Arts: A Historical View

by Joseph Malkevitch

At the college level, not only has Discrete Mathematics emerged as an important area in the training of computer scientists and mathematicians [3, 7], but it is evolving to take on a crucial new role in the teaching of mathematics to liberal arts students. The appearance of the text "For All Practical Purposes" [2], first published in 1988, has, I believe, played a key role. In order to understand this new development it is useful to take a brief look at the history of the liberal arts mathematics course since World War II.

Just after the War, if there was any mathematics requirement, it was a course called Mathematical Analysis, a mixture of algebra and elementary differential calculus, taught without much emphasis on theory or applications. The course did not serve liberal arts students well, however, and two new types of courses were developed. One course, pioneered by John Kemeny and J. Laurie Snell of Dartmouth, was called Finite Mathematics [5, 6]. The other course, harder to label and characterize, I will call the Topics Course [1, 8].

Finite Mathematics broke new ground with its content, which included sets, logic, matrices, probability, and graphs. However, just as important was its emphasis on the application of this material to problems in business, life sciences, and social sciences. Finite Mathematics caught on slowly, but, by the late 1960's, Finite Mathematics books, all variations on the Kemeny/Snell text, dominated the market.

The Topics Course, on the other hand, aimed to show students the beauty and elegance of mathematics, but with little attention to applications. One of the best of the texts for this course was Sherman Stein's *Mathematics, The*

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