

IN DISCRETE MATHEMATICS

Using Discrete Mathematics in the Classroom

Issue #2

October 1992

Speaking discretely...

by Joseph G. Rosenstein

This is the second issue of the Newsletter -- it took longer to produce than we intended, but here it is, and we hope that it meets your expectations!

The success of this newsletter depends on your participation. We have targeted it to teachers who already are using discrete mathematics in their classrooms, but can use the assistance and support of their colleagues. So send us assistance and support and we will pass it on.

Please communicate with us -- share with us your ideas, your classroom activities and experiences, your successes and failures, and your questions about implementing discrete mathematics in the schools. We are not asking for much -- a one page summary of an interesting lesson, a few paragraphs about a chapter in a book that you found valuable, a paragraph about your students' response to a new topic, a reaction to an article in the Newsletter, Your colleagues will find it valuable.

In this issue, we include articles on combinations, fractals, graphs, elections, Pythagorean triples, and hungry mice (see graph at right and the article on the bottom of page 3); discrete mathematics embraces a variety of topics.

A major focus of the issue is apportionment, represented by the "Have-you-seen ..." article at the right and the "Mini-bibliography" on page 9, both by Joseph Malkevitch. We also feature reviews of the ground-breaking *For All Practical Purposes* and the more recent treatment of similar topics in *Excursions in Modern Mathematics*. Finally, you will find here descriptions of two major opportunities to learn more about discrete mathematics during the summer. Enjoy!

Have-you-seen...

by Joseph Malkevitch

... the many articles this past year dealing with the census, apportionment and the Supreme Court?

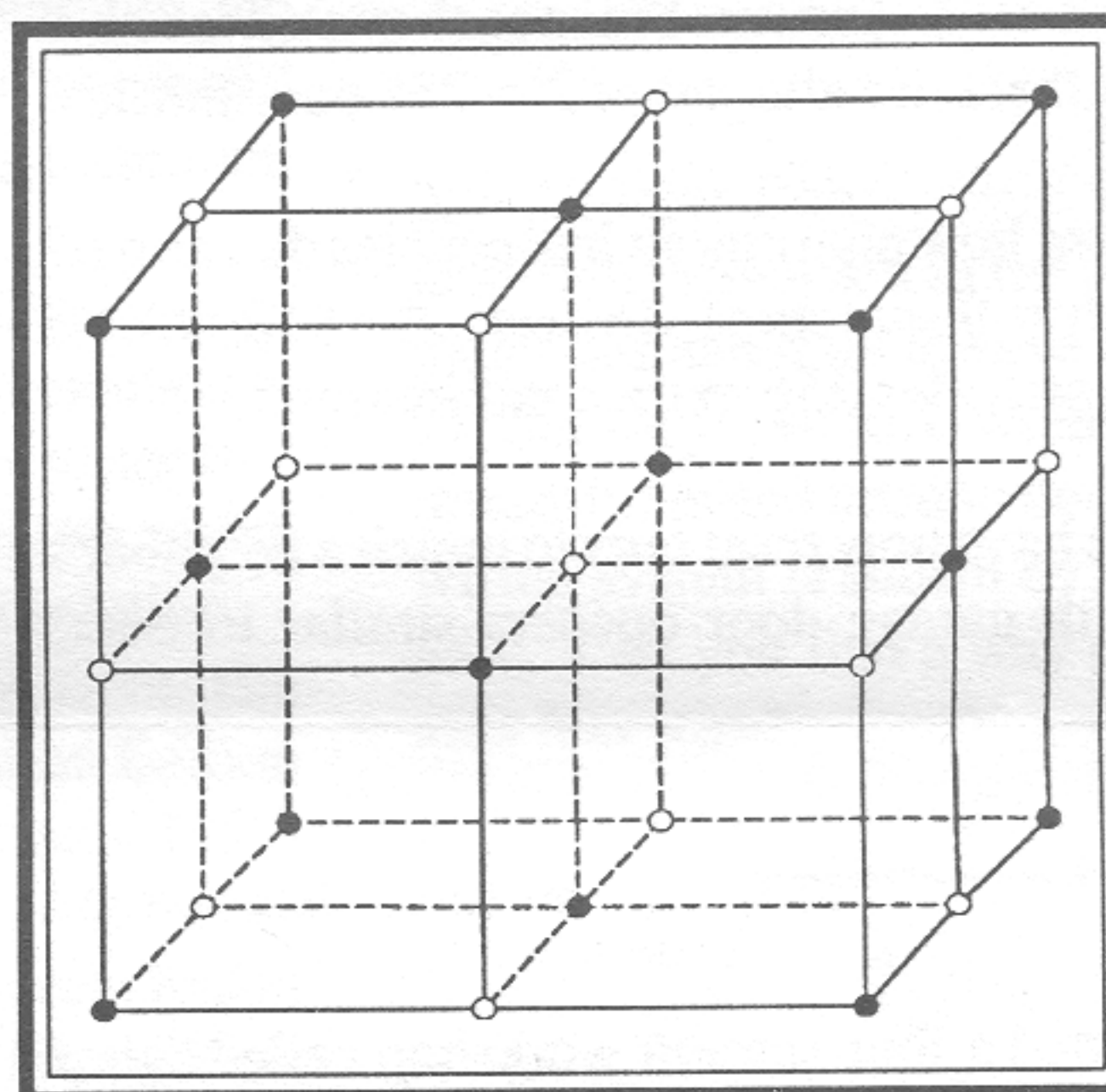
The United States Constitution has been a wonderful source for mathematics problems involving the census and apportionment. First, Article I, Section 2 calls for a regular population census. The information from the census is very important since it is used, for example, in deciding the financial share of various national programs to which each state is entitled. If rural populations are counted properly but urban populations are not, this will result in "shortchanging" cities and states that contain large cities.

The last census was unusually controversial because the response rate to mail questionnaires was lower than expected

and because the growing phenomenon of homelessness raised issues concerning how to count homeless people accurately. One fundamental insight from statistics is that for large populations (whether of cars, people, or anything else) it is often more accurate to get the information one desires from carefully constructed samples drawn from the population, rather than from trying to examine every element of the population, as the census currently tries to do. Considerable controversy developed after the 1990 census about the desirability of using statistical methods to "adjust" the census data to make it more accurate.

The census is also used in deciding how many seats each state is entitled to in the House of Representatives (HR below). Article I, Section 2 of the Constitution states: "Representatives...shall be apportioned among the several States...according to their

(Continued on page 8)



In This Issue

<i>Investigating Pythagorean Triples</i>	5
<i>Summer Programs</i>	7
<i>Mini-bibliography on Apportionment</i>	9
<i>Reviews of Discrete Mathematics Texts</i>	10
<i>Preferential Balloting</i>	11