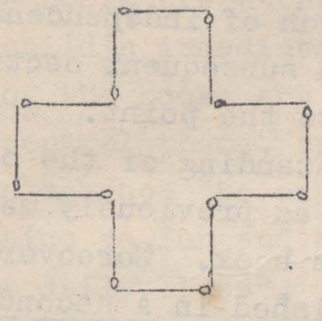
It is easily checked that $u_i = v_{i+1} - v_i$, $i=1,2,\ldots,n$. Adding these n equations, we have

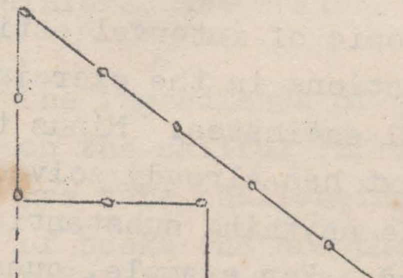
$$u_1+u_2+\ldots+u_n = v_{n+1}-v_1 .$$

Since $v_1=1=u_0$, the result is proved.

P10/74. Twelve matches, each of unit length, form the figure of a cross as shown. Rearrange the matches in such a way as to cover an area of four square units.



Solution.



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BOOK REVIEWS

Books for review should be sent to Mr. Lim Chee Lin, Hwa Chong Junior College, Bukit Timah Road, Singapore 10.

Statistical mathematics, by Robert Loveday, Cambridge University Press, Cambridge, 1973, viii + 104 pp, £1.10.

This book is a companion volume of the author's A second course in statistics and is written with two aims in mind: to present a mathematical approach to statistics and provide guidance to students preparing for Advanced Level Examinations. With respect to these aims, the book serves its purpose. The proofs are not only convincing in their mathematical treatment, but also challenging to the enthusiastic reader. The abundance of past examination questions serves excellently the second objective.

Below are some specific comments on each chapter.

Chapter 1. A second course in statistics does not contain a chapter on continuous distributions. It is justifiable, therefore, that Chapter 1 should include some illustrative examples on this topic.

Chapter 2. The concept of mathematical expectation is discussed. The stress here is, to some extent, mathematical deduction. Unfortunately, the concept of independence is not formally introduced. For example, the concept of independence of random variables, which requires a considerable amount of explanation is neglected. Yet, the condition of independence of random variables is vital to the results in subsequent sections.

Chapter 3. The chapter is short but to the point. A study of estimation theory requires a good understanding of the concept of independence of random variables which, as previously mentioned, the author does not help to promote in this book. Moreover, it does not appear that the concept is established in A second course in statistics. An illustrative example would be of great help to readers. Besides, the topic of interval estimates is not included although out of four questions in the exercises, two questions (2 and 3) are on interval estimates. Minus these questions and question 1, which the text has already solved, the remaining question does not provide anything substantial. More questions should have been included. For example, questions 11 (p.46), 6 (p.83) and 14 (p.84) can be put in the exercises for this chapter.

Chapters 4 and 5. These two chapters deal with the binomial and Poisson distributions respectively, and are expecially impressive in the common treatment of probability generating functions. This, together with the moment generating function presented earlier in Chapter 2, reveals the unity and beauty of mathematics. Solutions of several past examination problems are given to serve the purpose of guidance. It would have been better if the normal distribution had been presented in a separate chapter of this form instead of being distributed in bits and pieces over the other chapters.

Chapter 6. The examples and exercises are stimulating and useful, particularly to the reader who has an interest in more advanced problems.

The book is informative and concise. It caters particularly well for the interests of the intelligent student and those of readers who already have a good grasp of the basic concepts of probability and statistics.

Ho Soo Thong

Ways to mathematics, by E. E. Alliott and S. A. Adair, Longman, Singapore, 1972. Bk 1A, $1.90; Bk 1B,$1.80; Bk 2A,$2.10; Bk 2B, $2.00; Bks 3A,3B,4A,$2.20 each; Bk 4B,$2.30.

This series of eight books is packed with interesting ideas and emphasises the new approach to the teaching of mathematics. The books are attractively bound and well-illustrated so that a child's immediate attention and interest are captured. The covers of the books are differently designed with a group of clowns as the central theme, and the illustrations are meant for discussion in the classroom "to encourage children to see the learning of mathematics as fun and the use of mathematics as an integral part of their daily lives". Another attractive feature of the books is that a number of "activity" cards are enclosed with each book (except Book 4B) to reinforce the child's learning of concepts in mathematics.

These books have the ingredients of good textbooks though their success depends on the skilful implementation of the methods by the teacher. They are more challenging and adventurous than the traditional types of books and are therefore more demanding on the teacher's imagination, awareness and flexibility of teaching methods.

This new approach to the teaching of mathematics can be exceedingly rewarding if the outcomes and objectives are achieved. On the other hand, care should be taken that the slow learner, when manipulating the techniques, is aware of the ultimate results. This series of books, which has to be largely supplemented by exercises, is written for children in Primary 1 to Primary 4. It is not known whether the series would be extended to children in Primary 5 and 6. They form excellent reference books for the teacher who is looking for further materials to supplement his teaching.

There are a number of obvious misprints in the books especially in Book 1B. In Book 1A, the term "cube box" is first introduced with its meaning equated to that of a rectangular box. This term is not commonly used and may be confused with the word "cube".

Ways to Mathematics is based on the mathematics syllabus for primary schools in Singapore and has been approved by the Ministry of Education.

Lam Lay Yong

(continued from p.2)

J. A. Dieudonne: "... Bourbaki is accused of sterilizing mathematical research. I must say that I completely fail to comprehend this, since Bourbaki has no pretension of being a work stimulating to research. I was saying earlier that Bourbaki can only allow himself to write on dead theories, things which have been definitely settled and which only need to be gleaned (except for the unexpected, of course). Actually one must never speak of anything dead in mathematics, because the day after one says it, someone takes this theory, introduces a new idea into it, and it lives again. Rather let us say theories dead at the time of writing, that is to say, nobody has made any significant discoveries in these theories Bourbaki develops for 10, 20, or 50 years, whereas they are in the part judged important and central, serving as tools for research elsewhere. But they are not necessarily stimulants for research. Bourbaki is concerned with giving references and support to anyone who wants to know the essentials in a theory. He is concerned with knowing that when one wants to work, for example, on topological vector spaces there are three or four theorems one has to know: Hahn-Banach, Banach-Steinhaus, the closed graph; it is a question of finding them somewhere. But nobody has the idea of ameliorating the theorems; they are what they are, they are extremely useful (this is the fundamental point) so they are in Bourbaki. This is the important thing. As for stimulating research, if open problems exist in an old theory, obviously they are pointed out, but this is not the aim of Bourbaki." [2]

References

[1] E. C. Zeeman, Research, ancient and modern, I.M.A. Conference on Research in Mathematics (Reading, January 1974). To appear in the Bulletin of the Institute of Mathematics and its Applications.

[2] J. A. Dieudonne, The work of Nicholas Bourbaki, American Mathematical Monthly, 77 (1970), 134 - 145.

Notes

Nicholas Bourbaki is the pseudonym adopted by a group of mathematicians writing treatises in an ambitious attempt to systematize mathematical knowledge. This project was started in the 1930's and is still carried on by a group of mathematicians under the age of 50. Hitherto about 40 volumes have been written on algebra, topology and geometry, analysis and algebraic number theory.