

PREFACE

The latter half of the 20th century has seen rapid advances in the development of suitable techniques for solving decision-making problems. A catalyst for these advances has been the revolution in computing. Even the smallest business is able to obtain, relatively cheaply, significant computer power. This has led to a rapid increase of research into **discrete** or **finite** mathematics.

The vast majority of mathematical developments over the past 300 years since Newton have concentrated on advances in our understanding and application of **continuous** mathematics, and it is only recently that parallel advances in **discrete** mathematics have been sought. Much, although not all, of the mathematics in this text is based on developments this century which are still continuing.

The aim of this text is to give a comprehensive treatment of the major topics in discrete mathematics, emphasising their applicability to problems in a highly technological world.

This text has been produced for students and includes examples, activities and exercises. It should be noted that the activities are **not** optional but are an important part of the learning philosophy in which you are expected to take a very active part. The text integrates

- **Exposition** in which the concept is explained;
- **Examples** which show how the techniques are used;
- **Activities** which either introduce new concepts or reinforce techniques;
- **Discussion Points** which are essentially 'stop and think' points, where discussion with other students and teachers will be helpful;
- **Exercises** at the end of most sections in order to provide further practice;
- **Miscellaneous Exercises** at the end of each chapter which provide opportunities for reinforcement of the main points of the chapter.

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Discussion points are written in a special typeface as illustrated here.

Note that answers to the exercises are given at the back of the book. You are expected to have a calculator available throughout your study of this text and occasionally to have access to a computer.

Some of the sections, exercises and questions are marked with an asterisk (*). This means that they are either **not** central to the development of the topics in this text and can be omitted without causing problems, or they are regarded as particularly challenging.