

PREFACE

The last 100 years have seen many and varied applications of mathematics including pollution control, conservation of scarce resources, planning and management, computing, transportation and sport. Indeed, mathematics underpins almost every aspect of modern life although, in many cases, you may not be aware of how the mathematics has been applied. For example, methods of coding have now been designed for use in situations such as

- London Transport tickets
- bar codes
- pin numbers
- car window glass.

You do not need to understand the mathematics that underpins these developments in order to use these modern aspects of life, but the developing and designing of solutions to problems does require a fluency in mathematics, often to a high level.

This text builds on the foundation of mathematics as laid in the associated text *Pure Mathematics*. It will be assumed that you are familiar with the main concepts in this text although some of the important maths will be repeated. On the whole, you will be concentrating on understanding the topic, with applications being left for future study.

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 most chapters, providing opportunities for reinforcement of the main points of the chapter.

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 **not** central to the development of the topics in this text and can be omitted without causing problems.

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