

How to Use This Book

The purpose of this book is to give teachers a glimpse of the tremendous potential of MATHOMAT as an aid in the teaching of mathematics. The target audience for this book is upper primary and junior secondary teachers, although some lessons, such as Lesson 11, Unwrapping the Circle, may be used with senior secondary students.

Most people tend to think of the MATHOMAT as a sophisticated drawing instrument which is particularly appropriate for the teaching of space. However the lessons in this book cover not only key concepts in space, but also other areas, such as measurement, trigonometry, algebra and number, and involve students in carrying out investigations and communicating their results.

Lesson structure

The title page of each lesson contains its name, the year levels for which the lesson is intended, a 'sub-title' for the lesson which indicates the content of the lesson and a brief summary, which expands on this sub-title in terms of the mathematical content of the lesson and what the teacher can expect students to do during the lesson.

The second page of each lesson lists the materials required for the lesson and provides a lesson summary.

The next section of each lesson provides background information for the teacher. Sometimes this information relates to the purpose and organisation of the lesson, while at other times it discusses the underlying mathematics involved.

These preliminary sections are followed by the Lesson Outline, which describes, in detail, each stage of the lesson.

Where appropriate, photocopy masters of worksheets, handouts and overhead transparencies are provided, together with references to other resources.

Adapting the lessons

Because of the wide range of year levels suggested for each lesson, teachers may need to adapt the content in order to tailor it specifically for their class.

Most of the lessons, if done in full, require more than 45 minutes—some a great deal more. Teachers may wish to complete part of a lesson within a single session or devote several sessions to complete the full lesson.

Classroom organisation

While all of the lessons can be conducted using whole class instruction, students working individually, and class discussion, it is often a great advantage to have students working collaboratively in groups to carry out the tasks. Organisationally, the time required for a lesson can be much less if students in a group share a task such as measuring areas of shapes. Educationally, when students work in groups on some of the tasks in these lessons, they are forced to come to grips with mathematical terminology, as well as to explain the reasons behind their solutions. An essential feature of most lessons is the class discussion, which should occur not only at the end of lessons, but also at various stages throughout the lesson.

Curriculum outcomes

An important feature of this book is the last section which lists the curriculum outcomes and objectives which are addressed by the various lessons.

The first of these tables shows the level at which learning outcomes in the various strands and substrands of the Victorian *Curriculum and Standards Framework: Mathematics* (Board of Studies, 1995) are addressed by each lesson.

The second table identifies by number the outcomes for each strand and strand organiser of *Mathematics – A Curriculum Profile for Australian Schools* (Curriculum Corporation, 1994) addressed by each lesson. In this case, the levels can be determined by the first digit the outcome number.

The third table lists the objectives of various strands and substrands of the New South Wales *Mathematics K – 6 Syllabus* (NSW Department of Education, 1989) and post-primary stages of the NSW Mathematics Courses K–12.

References

Board of Studies (1995). *Curriculum and Standards Framework: Mathematics*. Melbourne: Board of Studies.

Curriculum Corporation (1994). *Mathematics – A Curriculum Profile for Australian Schools*. Carlton, Vic: Curriculum Corporation.

NSW Department of Education (1989). *Mathematics K – 6*. Sydney: NSW Department of Education.