New Syllabus Mathematics for O-Level 2

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Preface

These two volumes are intended for students who want to pass O-Level mathematics in the modern syllabus. They are particularly suitable for those who need to follow a thorough revision course, whether at school or as full-time, day-release or evening students at colleges of further education. Since the only mathematical knowledge assumed is simple arithmetic, the books are also suitable for those who need a pass in O-Level mathematics to improve their promotion prospects, and are starting the modern syllabus for the first time.

The majority of the exercises are divided into A and B sections. The questions in the A sections are generally shorter and intended for routine practice in the techniques appropriate to each part of the text. Longer and more thought-provoking questions are found in the B sections. Each of the sixteen chapters ends with a multiple-choice test and a selection of miscellaneous examples from past examination papers.

The authors are grateful to Dr Patricia Dauncey, for her helpful criticism of the manuscript and for working through the exercises. They also wish to thank the Controller of H.M.S.O. for permissions to use Statistical Abstracts.

The text covers the 'modern' alternative syllabus of each of the major examining boards, and the authors acknowledge with thanks the permission given by these boards to quote examination questions. The source of each question is shown in the text by the following abbreviations

(AEB)	Associated Examining Board
(C)	University of Cambridge Local Examinations Syndicate
(L)	University of London, University Entrance and School Examinations Council
(JMB)	Joint Matriculation Board
(NI)	Northern Ireland Schools Examinations Council
(O)	Oxford Delegacy of Local Examinations
(OC SMP)	Oxford and Cambridge Schools Examination Board. Schools Mathematics Project
(S)	Southern Universities Joint Board
(SCE)	Scottish Certificate of Education Examination Board.

Notation

$\{a, b, c, \dots\}$	the set of $a, b, c, \dots$
$:$	such that
$\in$	is an element of
$\notin$	is not an element of
$n(\quad)$	the number of elements in the set of
$\emptyset$	the empty (null) set
$\mathcal{U}$	the universal set
$\cup$	union
$\cap$	intersection
$\subset$	is a subset of
A'	the complement of the set A
N	the set of natural numbers
Z	the set of integers
R	the set of real numbers
PQ	operation Q followed by operation P
$f: x \rightarrow y$	the function of mapping the set X into the set Y
$f(x)$	the image of x under the function f
f^{-1}	the inverse of the function f
fg	the function f of the function g
open interval on the number line
closed interval on the number line
$\{x: -2 < x < 7\}$	the set of values of x such that . . .
$\Rightarrow$	implies that
$\Leftarrow$	is implied by
$\Leftrightarrow$	implies and is implied by
$=$	is equal to
$\equiv$	is identically equal to
$\approx$	is approximately equal to
$\neq$	is not equal to
$<$	is less than
$\leq$	is less than or equal to
$>$	is greater than
$\geq$	is greater than or equal to
$\nless$	is not less than
$\ngtr$	is not greater than
$ \quad $	the unsigned part of a signed number, that is the modulus
∞	infinity
M'	the transpose of the matrix M