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Progress to Higher Mathematics

M. T. Fyfe, A. Jobbings and K. Kilday
Arbelos (**www.arbelos.co.uk**)
£8 per book

This book is intended mainly for a Scottish audience, but its content is stretching enough for any 15 or 16 year old with an intention of going further. It is an answer to the lack of 'real' mathematics in the Scottish Standard Grade Credit or INT 2 examinations.

Although it is only 100 pages in length (including answers), it is packed with an excellent range of material. The introductory chapter includes favourites (not pupils!) such as expanding brackets, simultaneous equations, surds and exact angles. This is an essential lead in for the next chapter on solving equations using factorisation of quadratics. As an extension, there is a section on solving cubics. All extension material is shown with a ✱.

The next chapter visits lines and circles. There is a short section before each exercise giving definitions and some basic facts allowing pupils to tackle the problems. It contains 53 exercises organised into nine units. The remaining chapters has topics such as trig, trig graphs, trig equations, transforming quadratics around axes and finishing with a whole chapter on constructing algebraic equations. Each exercise has plenty of examples which will allow different ability classes to access the material. If necessary, any pupil needing just simply practice will have enough to do and gain in confidence.

As part of the book, the website provides a checklist which can be downloaded. This lists learning outcomes for pupils in each chapter with relevant page numbers. For example, "I can solve quadratic equations by factorising into the form $(x - a)(x - b)$." This sheet also allows pupils to identify areas of difficulty (or areas they do not like) and find examples to attempt. The overall presentation of the book is very good - it is reasonably small and thin and unlikely to be damaged too much. The graphical diagrams are very clear and precise (most given to the right of the question).

Whether this book is used as an essential skills for the Higher course or as part of the Higher course will be dependent on the class (and school), but either way, pupils who persevere through the exercises will most definitely gain mathematically. At £8 per book, this is value for money and each department should have at least one class set.

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