
Book Reviews

Title: Success with Mathematics
Author: Heather Cooke
Routledge Study Guides, 2003. £13.99

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Heather Cooke is Academic Liaison Officer at the Centre for Mathematical Education at The Open University. She has incorporated much of value from the CME environment and from her previous teaching experience into *Success with Mathematics*. This sensibly organized, attractive and very readable book treats its reader with empathy and encouragement at the start of what is seen by many as a daunting task, namely starting a mathematics course! Cooke (2003) writes: “Over the years, I have had the pleasure of working extensively with people in a variety of contexts who needed help to improve their mathematical knowledge, understanding and confidence.” Anyone reading the book would be in no doubt that she does this effectively!

Chapter 1 “Introduction – read this first!” sets the tone and establishes a rapport with the student, asking the reader to identify to themselves their attitudes to mathematics and what universities actually expect from students. Chapter 2 “Getting ready” amplifies this with a series of tasks to identify motivation, aspirations and concerns, time management and prioritization of tasks, resources (including people) and reflection; my feeling is that failing students have neglected such “obvious” issues and often need help in quantifying them in this manner. Chapter 3 looks at the practicalities of studying on one’s own, in a group, in lectures, making notes, using textbooks and reading mathematics (where “skimming” is ineffective). Effective study depends on developing good habits here; for example, I like students to maintain running lists of questions, to avoid the embarrassed silence that greets the tutorial opener “Who has a question?”. The purposes of assessment are outlined in chapter 4, one of the longer chapters, including how to gain marks, how to avoid throwing them away(!) and how to prepare for exams.

All of the above is widely applicable, especially in science/technology subjects. Mathematics as such makes its appearance in chapter 5 with “Mathematical communication” where the need to unpack its dense syntax in a variety of ways and to formalize/recapitulate ones understanding by rewriting, reading aloud and presenting to others is stressed. That writing acceptable mathematics is a strange business is evident on page 85 where one has $0 = 0!$ (a joke rather than an equation!) and on page 94 where “you are liable to loose a few marks” if plotted graphs, rather than sketched graphs are submitted – I would award zero marks! Curve sketching is a vital skill and I’d have liked harder examples here too (see comments below). An idea that the author might have considered would be to present examples of poor work and state where marks were lost (e.g. no units/scales, missing punctuation etc).

Chapter 6 “Learning by Doing” presents a rather nice set of modeling and algebraic problems that involved me in lots of doodling and scribbling, ie active learning!

I really liked the extension tasks along the lines of “now explore this idea with different parameters, formulate a conjecture and convince a skeptic”. Some quite advanced ideas, such as uniqueness, are hinted at here.

Chapters 7 and 8 outline the effective use of ICT and calculators in study; as for chapters 1-4, this is not specifically related to mathematics but essential nonetheless. Small suggestions include getting students to write down exactly what they want to find out before they start browsing the web, a diagram for standard trig values (page 159) and formulae for nPr and nCr (page 162).

The book also has an associated web site comprising useful links to other mathematical and study skills sites. I think more could be done here, for example by providing downloadable time and revision planners for students to fill in themselves and perhaps further materials, problem sheets and (selected) answers. Links to the UCAS www site and to the UK University sensitive map would be useful here.

This book stresses building confidence and good study patterns for any student, but especially for those returning to study and taking courses at foundation level. This is particularly true given the placing of chapter 9 “What next?” at the end of the book where the reader is taken through the preparation for “starting a mathematics course”. This emphasis is possibly at odds with the stated aim of helping students bridge the gap between school and (level 1) university. Certainly there is much that would help the school leaver/level 1 fresher here, but will they engage with it? For them “What next?” should come at the start of the book.

As always with a linear subject like mathematics, the dilemma is either to assume little background and avoid excluding anyone, but fail to engage the better-prepared student, or to assume something like the A-level core material and take the school leaver on with interesting challenges, but risk excluding the rest. The author has taken the first option and done an excellent job; perhaps

she can now write *Further Success with Mathematics* for the more mainstream student?

References

- [1] Cooke (2003) further particulars:
<http://mcs.open.ac.uk/cme/HCFurthPartics.htm>
- [2] Skill Math Website: <http://mcs.open.ac.uk/SkillMath/>
- [3] University of Wolverhampton UK Sensitive Maps <http://www.scit.wlv.ac.uk/ukinfo/uk.map.html>