Basic Mathematics

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These notes were prepared for students at Macquarie University in Australia but are freely available to anyone. However if you make use of them and are not a Macquarie University student it would be nice if you could email me at christopherdonaldcooper@gmail.com to let me know where you are from. And, if you are from outside of Australia perhaps you could send me a postcard of where you are from to pin up on my wall (Christopher Cooper, 31 Epping Avenue, EASTWOOD, NSW 2122, Australia).

INTRODUCTION

Although these notes cover material taught in Primary School and Lower Secondary, they are written for the mature student who suddenly finds that he or she has to return to mathematics in order to pursue some goal.

You may have thought that you left maths way behind and now, to study Chemistry, or Finance, or Statistics, you have to brush up that long-forgotten maths.

You may have forgotten those things that you probably never learnt. But you may remember, all too well, how scary it was. It probably seems even scarier now. Maths anxiety is a common disease, but there is a cure!

In the first chapter of these notes I discuss the nature of mathematics, and how it should be read quite differently to History or Psychology texts. Mathematics must be read slowly. Students have problems because they try to speed-read mathematics. Maths should be read slowly, with a pen and paper beside you.

The remaining three chapters explore the three basic areas of mathematics, arithmetic, algebra and geometry.

If these notes succeed in giving you confidence, and you wish to go a little further, you might like to read my notes *Concepts of Algebra* and *Concepts of Calculus*.

'Calculus' is a scary word, but the *Concepts of Calculus* notes develop the subject from the very

beginning, and emphasise the concepts more than the formulae. Calculus is a fundamental tool in many areas, ranging from Science and Engineering to Finance and Medicine. But in many cases you need to know the concepts more than the techniques.

Beyond this there are *Techniques of Algebra* and *Techniques of Calculus*, which are roughly at the level of First Year University.

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4. GEOMETRY