

Can one achieve more than 100% in maths?

Mathematics important for science & technology (along with all sorts of other subjects)

Sadly many people form BLOCKS to it at an early age

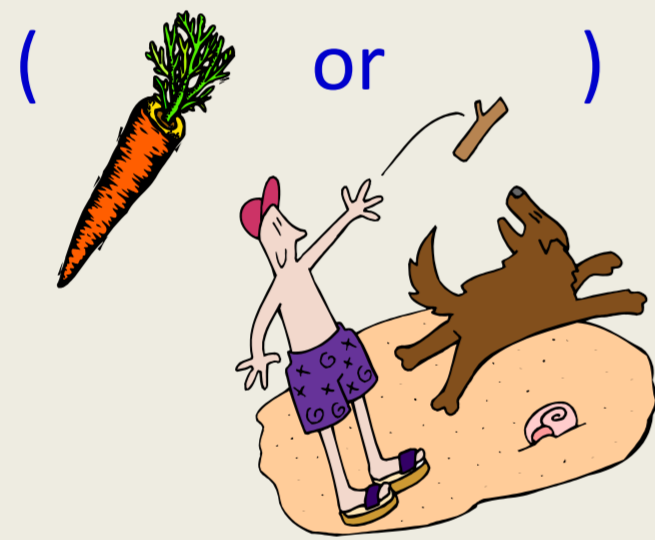
Removing blocks is a tricky business and involves

- relearning the simple tricks involved in maths
- boosting confidence
- practice – we *learn by doing*

“Considering how many fools can calculate, it is surprising that it should be thought either a difficult or tedious task for any other fool to learn how to master the same tricks.” “Being myself a remarkably stupid fellow, I have had to unteach myself the difficulties and now beg to present to my fellow fools the parts that are not hard. Master these thoroughly and the rest will follow. What one fool can do, another can.”

The Maths Improvement Project essentially tries to get students to practice maths through on-line quizzes (with feedback). **It comes with a promise** that those who use it will potentially get extra marks if they are borderline on passing the module. Participation involves:

- ÷ Diagnostic ability test
- + Includes questions on confidence
- ÷ Free access to quizzes with feedback
- ÷ Further diagnostic ability test
- ÷ Reward for participation
- ÷ Potential reward on specific modules



The quizzes (with feedback)

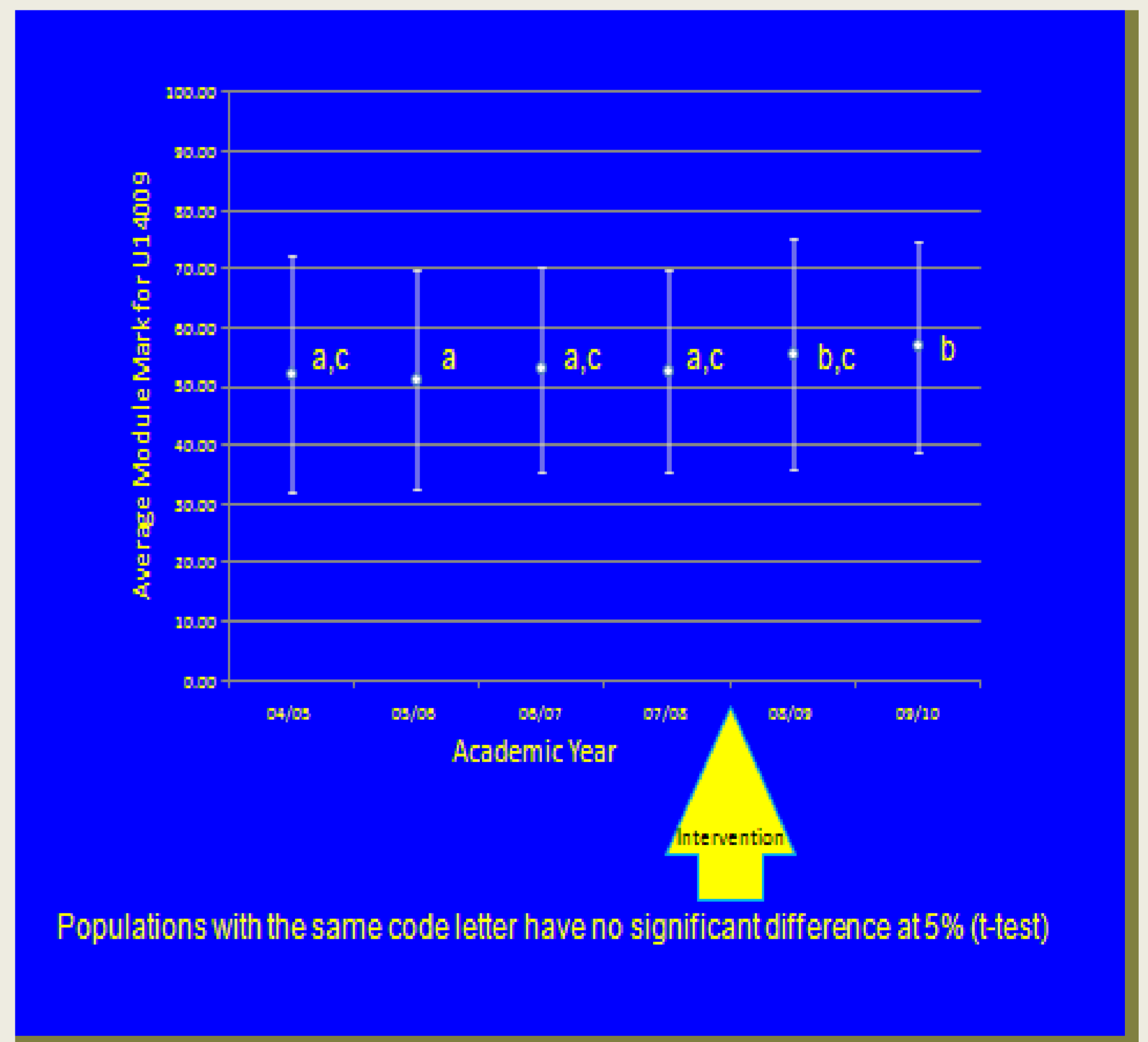
- Arithmetic operations
- Addition and subtraction
- Multiplication and division
- Addition and subtraction of fractions
- Multiplication and division of fractions
- Equivalent fractions
- Common denominators
- Factorising expressions
- Powers (2 quizzes)
- Rearranging equations

Sylvanus P. Thompson (1914)
Calculus made easy
MacMillan

Example quiz and feedback

Operation	Symbol	Value	Correct Answer
Brackets	()	0%	12
Exponents	ⁿ		
Multiplication and Division	x and /		
Addition and Subtraction	+ and -		

General Feedback: There are two mathematical operators here + and x. Mathematical operators are performed in a particular order giving some operations priority over others. The highest priority is to perform operation that are enclosed in brackets. The second highest priority is raising to powers. Raising to powers are sometimes referred to as exponents or indices. Both multiplication and division have the same level of priority. The lowest priority of all is taken by addition and subtraction these two operations have equal priority. When an expression contains both + and - they are normally applied from left to right. The order of operations can be remembered by the acronym BIDMAS (Brackets, Exponents, Division or Multiplication, Addition or Subtraction). Sometimes this is written as BIDMAS or BODMAS where / or O are mean forces and Order of.



Is there a moral issue in offering marks as an incentive?

- At Brookes, first year modules do not count towards the degree classification.
- Developing skills and competence at basic maths enables much science in later modules. (*ends justify the means*)

Despite the incentive only one mark has ever been changed since the carrot was offered.