

# Association of Teachers of Mathematics

Review from: [www.atm.org.uk](http://www.atm.org.uk)

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**Complete A-Z Mathematics Handbook 3<sup>rd</sup> Edition**

**John Berry, Ted Graham, Jenny Sharp, Elizabeth Berry**

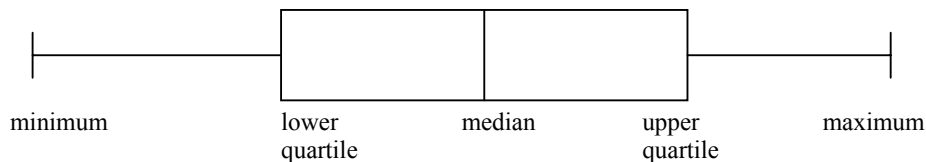
**Hodder & Stoughton, London, 2003, ISBN 0-340-87277-2 £9.99**

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'The A-Z Handbook explains all the key terms in Advanced Level Mathematics' claims the back cover. It is certainly comprehensive in its coverage of pure and applied mathematics, and likely to be useful addition to your sixth form mathematics library if you don't have it already.

Many of the entries are thorough and helpful. For example the entry on the remainder theorem includes an example which notes the connection between the original polynomial, the factor and the remainder, something that students rarely grasp. The rationale for examples was not clear to me, and not all of them were as helpful. The entry for the 'binomial theorem for any rational index' includes two examples of the form  $(1 + ax)^q$ ,  $q \in \mathbb{Q}$ , but no example of the form  $(c + bx)^q$ . The latter type invariably cause students more problems as they fail to rearrange to the form  $c^q(1 + \frac{a}{c}x)^q$  before embarking on the expansion...

There are issues of accuracy (or some might say style) for some of the statistics entries. Personally I like to see box and whisker diagrams (box plots) labelled with the five key values (maximum, minimum, median and quartiles) and with lines at the end of the whiskers, as shown in the diagram below. I was surprised to see the whiskers in the handbook ending with a dot and key values not labelled. Since dots are often used to indicate outliers, using dots at the end of the whiskers could be misleading.



I was concerned by the entry for confidence intervals: 'the probability that the interval contains the population mean is 0.95' is a common misconception about a 95% confidence interval. There is a 5% chance that the 95% confidence interval doesn't contain the population mean but this does not mean that the probability that the confidence interval contains the mean is 0.95 – it's a bit more complicated than that!

The example for the standard error is incorrect. The standard error is the standard deviation for the distribution of sample means for samples of a given size,  $n$ , from a population with standard deviation  $\sigma$ . The standard error is  $\frac{\sigma}{\sqrt{n}}$ . The example suggests that the standard error can be found by calculating the standard deviation for a set of sample means and dividing by the square root of the sample size....

The handbook is intended to complement a student's study of A level mathematics and I suspect that it will do that. I'm not convinced that it explains all 'mathematics terms and concepts clearly' – a very ambitious claim! but it is a useful compendium none the less.