

11 December 2003

To: Head of Centre  
SQA Co-ordinator  
Scottish Executive  
Local Authority — SQA Co-ordinator

**For the attention of all staff responsible for the delivery of  
National Qualifications in Mathematics**

Action by Recipient
Response required
✓ <b>Note and pass on</b>
None – update/information only

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Dear Colleague

**Graphing Calculator solutions to questions on Roots and Factors of Polynomials and  
Recurrence Relations**

The Mathematics update letter of November 2002 contained, as an appendix, an update of an earlier document providing guidance on acceptable graphing calculator solutions to questions in examinations for National Qualifications in Mathematics. The update letter and the foreword to the appendix document both indicated that SQA would be issuing further illustrations of acceptable graphing calculator solutions to examination questions on a wider range of topics, as they were approved by the Mathematics Advanced Calculator Working Group and the Mathematics and Statistics Assessment Panel.

Enclosed is the first of this series of documents which provides guidance on acceptable graphing calculator solutions to questions on roots and factors of polynomials and recurrence relations.

The guidance consists of examples of appropriate candidate responses and marking schemes which indicate the minimum working required for the award of each mark.

Please note that this information does not constitute a change to the syllabus for Higher Mathematics. Graphing calculator solutions to examination questions are not a requirement of the Higher Mathematics Course but are now considered, in certain instances, to be acceptable alternative solutions.

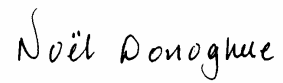
The Advanced Calculator Working Group is currently considering further topics to determine where graphing calculator solutions to examination questions will be acceptable.

This development is in line with the recommendations of the report — Advanced Calculators and Mathematics Education (ACME) — published by the Scottish Consultative Council on the Curriculum in 1999 (now Learning and Teaching Scotland) and endorsed by the Minister for Children and Education at that time.

The Marking Instructions for the 2003 Mathematics examinations at Higher and Intermediate 2, which are available on SQA's website ([www.sqa.org.uk](http://www.sqa.org.uk)), indicate where graphing calculator solutions to certain questions in Paper 2 were acceptable this year.

If you require any further clarification please do not hesitate to contact me.

Yours faithfully

A handwritten signature in black ink that reads "Noël Donoghue". The signature is written in a cursive style with a large initial 'N'.

Noël Donoghue  
Qualifications Manager  
Mathematics and Science