Tuition support for the Advanced Extension Award (AEA) and the Sixth Term Entry Paper (STEP) in Mathematics

Expert tuition developed by the Further Mathematics Network is now available live online to support students studying for STEP and AEA qualifications in Mathematics – see www.mei.org.uk/stepaea. These qualifications use unstructured problems to assess students' mathematical problem-solving skills, rather than merely requiring them to regurgitate standard techniques to answer standard questions. Unlike A level, they allow students 'thinking time' to get to grips with harder problems.

In the past a valid criticism of these examinations has been that only the most privileged students could access expert tuition to develop the high level mathematical problem solving skills needed. The live online support now available means that such tuition can be accessible to all.

The A* Grade in A level Mathematics and Further Mathematics
l 0, TD(v)Tj 45 0 TD(a)Tj 51 0 TD(l)Tj 20 0 TD(i)Tj 20 0 TD(d)Tj 51 0 TD( )0 0 -9e

Appendix 1

Data relating to A Level Mathematics 1989 2009 (Source JCQ) & predictions for 2010-11

Year	Mathematics entries (FM excl)	FM entries	Total Mathematics entries (FM incl)	FM as % of Mathematics	Total A Level entries (All subjects)	Mathematics as % of total entries (FM incl)
1989			84 744		661 591	12.8
1990			79 747		684 117	11.7
1991			74 972		699 041	10.7
1992			72 384		73D( )Tj 387 0 TD(1)Tj 46 0 TD(1)Tj 46	

Appendix 2

Mathematical Sciences

Secretariat: Ivor J Goddard, De Morgan House, 57-58 Russell Square, London WC1B 4HS
Tel: 020 7291 9979 Email: cms@lms.ac.uk web: www.cms.ac.uk

Right Hon Ed Balls MP
Secretary of State for Children, Schools and Families
Sanctuary Buildings
Great Smith Street
London
SW1P 3BT

16 April 2010

Dear Secretary of State,

Advanced Extension Award (AEA) in Mathematics

I write as Chair of the Council for the Mathematical Sciences to support ACME s position on the ongoing need for an Advanced Extension Award (AEA)-type qualification in mathematics.

The Council for the Mathematical Sciences comprises the Institute of Mathematics and its Applications, the London Mathematical Society, the Royal Statistical Society, the Edinburgh Mathematical Society and the Operational Research Society, and has a particular interest in student progression to and success in mathematical sciences in Higher Education in the UK. The CMS feels that the introduction of the A* grade at A-level (and the corresponding stretch and challenge material to be introduced in some A-level units) will not be effective either in discriminating between the highest achieving candidates or inspiring and challenging the very best students; the retention of an AEA in mathematics is a necessary measure that the CMS supports.

Unlike many other A-level subjects, achieving a score of over 90% in an A-level mathematics examination is not necessarily an indication of being better prepared for a highly demanding degree course in the subject than having achieved a standard grade A. Moreover, the new grade promotes an approach to learning mathematics which does not reflect what is valued at degree level. Ultimately, it is the ability to think mathematically rather than merely master the content of a syllabus and complete standard questions to a very high level of accuracy that is the best determinant of future success in mathematical sciences in Higher Education; the Advanced Extension Award is an effective way of measuring this skill amongst those that have access to the qualification, and the nature of the AEA examination encourages a healthier approach to mathematics which stimulates and inspires students working at the highest level.

One might presume that this issue can be tackled simply by introducing AEA-type questions to A-level examinations. The intention of improving the stretch and challenge content at A-level is welcome, but the breadth of the ability of the A-level mathematics cohort renders it wholly impractical to include a sufficient number of questions that truly test the very best students to the extent that the AEA does. As ACME states, this is not a failing of the A-level as a qualification but is a natural consequence of the variety of destinations and purposes for which the subject is studied. An attempt to provide for the whole cohort through A-level mathematics alone would either be ineffective at the top end or would render parts of the examinations inaccessible to the majority of students and damage participation rates; neither of these is in the national interest.

The CMS agrees with ACME s statement that an extension award, together with Further Mathematics, is a necessary and effective response to the breadth of the cohort. The CMS therefore strongly supports ACME s position that the AEA in mathematics should be retained until such time as an improved replacement has been developed. Moreover, we hope that DCSF will commit the necessary resources working with key stakeholders across the community to develop such a replacement for the AEA.

Yours sincerely,

Professor Sir David Wallace CBE FRS FREng
Chair, Council for the Mathematical Sciences