

Principal Assessor Report 2003

Assessment Panel:

Mathematics and Statistics

Qualification area:

**Subject(s) and Level(s)
Included in this report**

Mathematics – Intermediate 2

Statistical information: update

Number of entries in 2002	12497
Pre appeal	12571

Number of entries in 2003	12927
Pre appeal	

General comments re entry numbers

There was a slight increase in the number of candidates this year. More candidates (around 33.7% compared to 20% in 2002) were presented for Mathematics 1, 2 and Applications. Around 496 candidates from S4 were presented for Intermediate 2. 399 of these for Mathematics 1, 2 and 3. The mean mark decreased from 44 out of 81 in 2002 to 38 out of 80 in 2003.

General comments

- Feedback from markers/centres indicated that the paper reflected the syllabus.
- The paper was designed to have a 50% pass-mark. However candidate performance in two questions indicated that the paper was more demanding.
- The increase in Mathematics 1, 2 and Applications ensured that more candidates had access to a more appropriate course.
- Mathematics 1, 2 and Applications was attempted by the poorer candidates.
- Many markers reported very poor performance in algebra question within unit 3.

Mathematics 1, 2 and 3.

Paper 1 (non-calculator)	Average mark	11.9 (max mark 26)
Paper 2	Average mark	27.3 (max mark 54)

Mathematics 1, 2 and Applications

Paper 1 (non-calculator)	Average mark	11.7 (max mark 26)
Paper 2	Average mark	21.6 (max mark 54)

Grade boundaries at C, B and A for each subject area included in the report

Distribution of awards	%	Cum %	Number of candidates	Lowest mark
Upper A	3.3	3.3	422	64
Lower A	13.6	16.8	1755	53
B	19.7	36.5	2545	44
C	21.7	58.2	2801	35
No award	41.8	100.0	5404	
			12927	

General commentary on passmarks and grade boundaries

- While SQA aims to set examinations and create mark schemes which will allow a competent candidate to score a minimum 50% of the available marks (notional passmark) and a very well-prepared, very competent candidate to score at least 70%, it is almost impossible to get the standard absolutely on target every year, in every subject and level
- Each year we therefore hold a passmark meeting for each subject at each level where we bring together all the information available (statistical and judgmental). The Principal Assessor and SQA Qualifications Manager meet with the relevant SQA Business Manager and Statistician to discuss the evidence and make decisions. The meetings are chaired by members of the senior management team at SQA
- We adjust the passmark downwards if there is evidence that we have set a slightly more demanding exam than usual, allowing the pass rate to be unaffected by this circumstance
- We adjust the passmark upwards if there is evidence that we have set a slightly less demanding exam than usual, allowing the pass rate to be unaffected by this circumstance
- Where the standard appears to be very similar to previous years, we maintain similar grade boundaries
- An exam paper at a particular level in a subject in one year tends to have a marginally different set of grade boundaries from exam papers in that subject at that level in other years. This is because the particular questions are different. This is also the case for exams set in centres. And just because SQA has altered a boundary in a particular year in say Higher Chemistry does not mean that centres should necessarily alter boundaries in their prelim exam in Higher Chemistry. The two are not that closely related as they do not contain identical questions
- Our main aim is to be fair to candidates across all subjects and all levels and maintain standards across the years, even as syllabuses evolve and change

Comments on grade boundaries for each subject area

The pass mark was set at 35. In determining the 2003 pass mark the following factors were considered:

- difference in marks available this year (previously total mark was 81)
- unexpected increase in difficulty of question paper
- acknowledgement that nature of candidates has not changed from 2002.

The overall effect was a decrease at pass mark stage of 1.3% in the pass rate.

Comments on candidate performance

General comments

Many markers reported a very mixed response by candidates – some doing well, while others clearly encountered difficulty. The standard of working presented by candidates continues to improve. Performance in paper 1 in both versions was poorer than that in paper 2. A significant number of candidates continued to be unable to carry out routine calculations. The skills acquired in mental calculation appear not to be transferred by candidates to written calculations that have to be performed without access to a calculator. This is particularly evident in responses from candidates tackling Mathematics 1, 2 and Applications. In Mathematics 1, 2, 3 poor performance in algebraic questions continues to be a concern.

Areas of external assessment in which candidates performed well

In paper 1 of both versions, the performance of candidates was good in the statistics question.

In paper 2 of both versions, candidates performed well in questions 2 and 5.

Areas of external assessment in which candidates had difficulty

Paper 1:

Question 3 (both versions)

Although the majority of candidates gained the first mark, few were able to perform correctly the calculation of $\frac{1}{3} \times 3.14 \times 10 \times 10 \times 12$ leading to $3.14 \times 100 \times 4$ and an answer of 1256 cm^3 .

Question 6 (1, 2 and 3)

Simplification of surd and an algebraic fraction was poorly handled by the majority.

Question 7 (both versions)

Few candidates recognised this as Pythagoras.

Question 8 (a) (1, 2 and 3) and Question 4 (b) (1, 2 and Applications)

The negative squared term presented difficulties for many.

Question 8 (1,2 and Applications)

Few candidates were able to calculate $S = 2 \times 8.5 \times 4.5 + 2 \times 4.5 \times 5.5 + 2 \times 8.5 \times 5.5$.

The method which candidates should be advised to adopt is $S = 8.5 \times 9 + 9 \times 5.5 + 8.5 \times 11$, hence reducing the level of calculation involved.

Paper 2

Question 4 (both versions)

Few candidates recognised this question as a question on the straight line. Performance in previous years has been good where candidates have been asked to write down the equation connecting y and x . However the introduction of a context and the change of variable meant that the vast majority of candidates attained no marks.

Question 9 (1, 2 and Applications)

Many candidates appear to be unfamiliar with this area of the syllabus. A similar question covering this content and applying the knowledge to a real life situation can be found in the winter diet.

Question 11 (a) (1, 2 and 3)

Extremely poor performance. Fractional indices added to the difficulty.

Question 12 (b) (1, 2 and 3)

Few candidates were able to attempt this question. While acknowledging the difficulty of this type of question for the majority of candidates, the more able candidates should be able to tackle this. Centres are reminded that such questions are part of the Intermediate 2 syllabus.

Recommendations

Feedback to centres

Centres should continue to consider the appropriateness of the Applications option for their candidates.

In the National Assessment Bank, candidates have access to a calculator. Centres may need to consider how best to maintain and practise number skills and mental strategies in preparation for the non-calculator paper in the external examination especially in the 1, 2 and Applications option.

In the majority of cases, candidates tackled most questions. Centres should continue to consider how best to maintain and practise knowledge acquired at earlier stages in the course on a regular basis in an attempt to improve retention.