

Principal Assessor Report 2004

Assessment Panel:

Mathematics and Statistics

Qualification area

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

Mathematics – Intermediate 1

Statistical information: update

Number of entries in 2003	5312
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Number of entries in 2004 (pre-Appeal)	6233
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General comments re entry numbers

The number of entries was 14.8% more than last year.
24% of the candidates were presented for Mathematics 1, 2 and Applications compared to 26% in 2003.
22.2% of the presentations were from candidates in S4 (12.4% in 2003) and 5.7% were from candidates in S3.

Statistical Information: Performance of candidates

Distribution of awards

See table overleaf.

Comments on any significant changes in percentages or distribution of awards

Grade boundaries for each subject area included in the report

Distribution of awards	%	Cum %	Number of candidates	Lowest mark
Pre-Appeal				
A	15.6	15.6	970	57
B	17.6	33.2	1097	47
C	19.0	52.2	1184	38
D	9.8	62.0	611	33
No award	38.0	100.0	<u>2371</u>	
			6233	

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 arrangements evolve and change.

Comments on grade boundaries for each subject area

The pass mark was set at 38 out of 80. The effect was an increase of 0.3% in the number of candidates passing at pre-Appeal stage compared to post-Appeal number of candidates passing in 2003. The percentage of candidates achieving an A grade increased by 0.1% at pre-Appeal stage compared to the post-Appeal percentage of candidates achieving an A grade in 2003.

Comments on candidate performance

General comments

Overall candidates performed to expectations. There were however a significant number of candidates scoring very low marks for whom this course appears to be inappropriate. Markers commented on the inability of many candidates to carry out routine calculations without a calculator. Most candidates knew the correct strategies but many could not carry out the required calculations in Paper 1. Markers reported that candidates performed better in Paper 2 than in Paper 1.

Mathematics 1, 2 and Applications appeared to be attempted by the poorer candidates.

Mathematics 1, 2 and 3

Paper 1 Mean mark 15.1 out of 33

Paper 2 Mean mark 25.5 out of 47

Mathematics 1, 2 and Applications

Paper 1 Mean mark 12.1 out of 33

Paper 2 Mean mark 20.2 out of 47

Areas of external assessment in which candidates performed well

The questions which attracted a high number of correct responses were:

Mathematics 1, 2 and 3.

Paper 1 - Questions 5 and 6. Paper 2 – Questions 1, 5, 8a and 9.

Mathematics 1, 2 and Applications.

Paper 1 – Question 6. Paper 2 – Questions 1, 5 and 8a.

Areas of external assessment in which candidates had difficulty

Paper 1

Question 1(c) Many candidates did not understand the order of operations.
A common wrong answer was 3240 resulting from 360×9 .

Question 2 Many candidates knew the correct method but were unable to multiply 45×12 correctly.

Question 3 Many candidates knew the correct method but were unable to multiply $4 \times 2.5 \times 1.2$ correctly.
Many candidates succeeded with $4 \times 2.5 = 10$ but were unable to multiply 10×1.2 correctly.

Question 4(a) Many candidates were able to identify that the median was halfway between -2 and -1 but were then unable to find the correct value of the median.

Question 4(c) Very few candidates interpreted the range correctly.

Question 5 (Mathematics 1, 2 and Applications)

Many candidates interpreted the flow chart correctly but were unable to multiply 0.07×9000 correctly.

Question 7(a) Very few candidates knew how to calculate mean from a frequency table.

Question 8 (Mathematics 1, 2 and Applications)

To find Total Deductions many candidates added Tax + National Insurance + Total Deductions.

Question 9 (Mathematics 1,2 and 3)

Few candidates were able to proceed further than obtaining 20 000 000 000.

Question 10 Candidates presented for Mathematics 1, 2 and Applications performed significantly worse in this question than those presented for Mathematics 1, 2 and 3.

Paper 2

Question 3 Many candidates were unable to find the length of time from 2040 to 0810.
Many candidates were unable to express 11 hours 30 minutes as a decimal equivalent.

Question 6(a) Most candidates correctly expanded the brackets to obtain $8 - 2t + 5t$ but were unable to collect the like terms correctly. A common answer was $8 - 7t$.

Question 6 (Mathematics 1, 2 and Applications)

Few candidates scored full marks in this question. $£89.40 \times 4 = £357.60$ and $£89.40 \times 12 = £1072.80$ were common answers. Many candidates also added 14% on to their answers.

Question 8(b) Many candidates did not recognise Pythagoras and hence most scored no marks.
(Those candidates who recognised Pythagoras usually scored full marks.)

Question 10 (Mathematics 1, 2 and 3)

Very few candidates identified the correct right angled triangle but the majority received partial credit due to working being clearly set out.

Question 10 (Mathematics 1, 2 and Applications)

Many candidates did not order the data and hence obtained the wrong median and upper quartile.

Question 11(a) Many candidates interpreted the vertical scale incorrectly. 3.2% was a common answer.

Question 11(c) Very few candidates scored full marks. $(2.5\% \text{ of } £1400) \times 3 = £105$ was a common answer.

Question 12 (Mathematics 1, 2 and Applications)

Was difficult for most candidates. Some used $SA = 2\pi rh$ but few were able to deal correctly with the overlap.

Question 14 Was difficult for most candidates but the majority received partial credit due to working being clearly set out.

Recommendations

Feedback to centres

Overall, there is a significant number of no awards in Intermediate 1 Mathematics. A number of these are from candidates taking the Maths 1, 2 and 3 course. It may be appropriate for centres to consider entering candidates for Maths 1, 2 and Applications in these circumstances.

Centres should consider how best to maintain and practise number skills and mental strategies in preparation for the non-calculator paper in the external examination.

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.