Principal Assessor Report 2005

Assessment Panel:	**Mathematics and Statistics**

Qualification area

Subject(s) and Level(s) Included in this report	**Mathematics – Intermediate 1**

Statistical information: update

Number of resulted entries in 2004	6,233

Number of resulted entries in 2005	7,797

General comments re resulted entry numbers

The percentage of entries by stage (at the passmark stage) in 2004 and 2005 are shown in the table below.

Stage	2004	2005
S3	5.7	17.2
S4	22.2	23.8
S5	64.7	51.4
S6	5.1	3.9
FE	2.0	2.7
Other	0.4	1.1

The percentage of entries in 2004 and 2005 for the two optional courses C100 Mathematics: Maths 1, 2 and 3 and C101 Mathematics: Maths 1, 2 and Applications are shown in the table below.

Course	2004	2005
C100	76.2	79.1
C101	23.8	20.9

Statistical Information: Performance of candidates

Distribution of awards including grade boundaries

Distribution of awards	%	Cum %	Number of candidates	Lowest mark
Maximum Mark- **80**	-	-	-	-
A	22.9	22.9	1,787	57
B	16.8	39.8	1,313	47
C	17.9	57.6	1,394	38
D	8.8	66.4	685	33
No award	33.6	100.0	2,618	-

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 any significant changes in distribution of awards/grade boundaries

Grade boundaries were unchanged from 2004.
The effect was an increase of 5.4% in the percentage of candidates (pre-appeal) passing compared to 2004.
The percentage of candidates achieving an A grade (pre-appeal) increased by 7.3%.
A large increase in the number of entries from high performing S3 candidates has contributed significantly to the increase in candidate numbers achieving A, B and C grades.

Comments on candidate performance

General comments

Markers reported that the number of good responses had increased, but there were still a large number of very poor responses. Many candidates were unable to carry out routine calculations without a calculator. The quality of responses appeared to vary from centre to centre rather than within centres. Candidates from S3 and S4 appeared to be performing better than other candidates.
The table below shows the mean mark in each paper for 2005 and 2004.

	Mathematics 1, 2 and 3		Mathematics 1, 2 and Apps.	
	2005	2004	2005	2004
Paper 1 (/30)	16·0	15·1	13·1	12·1
Paper 2 (/50)	27·1	25·5	20·6	20·2
Total (/80)	43·1	40·6	33·7	32·3

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 – Question 6. Paper 2 – Questions 3(a), 5(a)(b) and 12.

Mathematics 1, 2 and Applications.
Paper 1 – Question 5(b). Paper 2 – Questions 3(a), 5(a)(b) and 6(a)

Areas of external assessment in which candidates had difficulty

Paper 1

Question 1(a) The number of candidates who could not calculate 6·17−2·3 was disappointingly large.

Question 1(c) (Mathematics 1, 2 and Applications) [Also question 9(a) in Mathematics 1, 2 and 3]
Many candidates were unable to write 7/1000 as a decimal.
000.7 was a common wrong answer.

Question 4 Very few candidates knew how to calculate mean from a frequency table.
Many were able to complete the table correctly but then did not know to calculate 567 ÷ 100.
Significant numbers attempted to calculate 567 ÷ 6 or 33÷ 6.
A disappointingly large number of those who attempted to calculate 567 ÷ 100 were unable to carry out the calculation correctly.

Question 5(a) (Mathematics 1, 2 and Applications)
Very few candidates knew what an arc in a network diagram was.
2, 3 and 4 were common wrong answers.

Question 7 (Mathematics 1, 2 and 3)
Many candidates were unable to complete the table correctly.

A significant number of candidates completed the table for y=x+3 and went on to score 2 marks in part (b) for drawing this line.

Question 7 (Mathematics 1, 2 and Applications)
Most candidates were able to find the areas of the three rectangles but little else.

Question 8 Many candidates knew the correct methods but were unable to calculate 1·62×50 and 320÷200 correctly.

Question 9(b) (Mathematics 1, 2 and Applications)
Many candidates did not attempt this question. Some candidates wrote on their scripts that they did not have a protractor.

Question 10(b) Many candidates achieved partial credit by completing the magic square for a total other than −6.

Paper 2

Question 1 A disappointingly large number of candidates were unable to round the answer to 55×55×55 to the nearest thousand.

Question 2 A variety of incorrect methods were evident in candidates' responses to this question.
These included 3% of 72000=2160, 3% of 72000+72000=74160, 3% of 250+72000=72007.50, 3% of 250+250=257.50 and 3% of (72000+250)=2167.50 .
In addition, a significant number of candidates did not know how to calculate 3% of ……
÷3, ×0·3, ×0·003, ×0·0003 were common wrong methods.

Question 4 (Mathematics 1, 2 and Applications)
Both formulae were done very poorly, especially the use of × for * in (a).

Question 6(b) (Mathematics 1, 2 and 3)
Most candidates were able to expand the brackets correctly to obtain 11n+28−8n but were unable to collect the like terms correctly. A common answer was 3n+28.

Question 6(b) (Mathematics 1, 2 and Applications)
Many candidates calculated the monthly saving (£28.71) but proceeded no further.

Question 7(a)(b) A significant number of candidates did not know the difference between the mode, the median and the mean.

Question 9 Most candidates got as far as 140º then stopped or proceeded incorrectly.

Question 10 (Mathematics 1, 2 and Applications)
Few candidates scored more than 1 mark in this question.
Some ordered the data but could not find the lower quartile, others did not order the data.
In (b) many candidates calculated the range.

Question 11 A variety of incorrect methods were evident in candidates' responses to this question.
These included using $2\pi d$, $\frac{1}{2}\pi d$, πr, πr^2, $\frac{1}{2}\pi r^2$ or $2\pi r^2$ for the length of the bends and using 7000 for the length of the straights.
A common wrong answer was 70+70+100+100=340.

Question 12 (Mathematics 1, 2 and Applications)
Most candidates were unable to work out the correct number of hours worked in the week.
A common answer was £113·75. This followed on from interpreting Monday -Thursday in the advert as **one** day resulting in 11½ hours worked from Monday to Friday.

Question 14 Many candidates did not know how many days are in a year.

Question 15(b) Few candidates scored well in this question. The majority gained only the first mark. Some candidates attempted to calculate the number of slabs required to fit round the perimeter rather than cover the area occupied by the patio.

Recommendations

Feedback to centres

Centres should consider the appropriateness of this course for their weaker candidates.

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.

Centres should ensure that each candidate is issued with a ruler and a protractor for the external examination.