



Principal Assessor Report 2007

Assessment Panel:

Mathematics and Statistics

Qualification area

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

Mathematics : Intermediate 2

Comments on candidate performance

General comments

Markers confirmed that the papers covered the syllabus and sampled it well.
The feeling was that the candidates performed better in Paper 2 than in Paper 1.

It was noted that there seemed to be very few candidates who performed very badly, suggesting that the vast majority of candidates are being presented at the appropriate level.

Markers continue to comment on occasional packets of very good papers – usually from younger candidates but, this year, increasingly from colleges of Further Education.

Some markers commented that Applications candidates seemed to perform better this year. However, in general, Applications candidates do not perform as well as candidates sitting Units 1, 2, 3.

Areas in which candidates performed well

Paper 1:

Q5 (Both versions):	Breaking brackets
Q9 (Units 1,2,3):	Surds
Q10a (Units 1,2,3):	Cosine graph
Q8 (Applications):	Flow chart

Paper 2:

Q1 (Both versions):	Percentages
Q2 (Both versions):	Length of arc
Q3a,b (Both versions):	Statistics
Q6 (Both versions):	Probability
Q9 (Both versions):	Trigonometry problem
Q11 (Units 1,2,3):	Change the subject of the formula
Q13 (units 1,2,3):	Solve trig equation
Q11 (Applications):	Loan question

Areas which candidates found demanding

Paper 1:

Q2 (Both versions):	Most candidates knew how to tackle this question but many could not cope with the double negative in the gradient and lost this mark.
Q4 (Both versions):	A very popular strategy here was to use a graphical solution. However most of the candidates using this strategy could not draw the lines accurately. Those who used the algebraic approach tended to gain most/all of the marks.
Q6b (Both versions):	Many did not recognise the link between parts (a) and (b).

- Q7 (Units 1,2,3): This question was very disappointing. Candidates struggled to factorise part(a) correctly.
- Q8 (Units 1,2,3) and Q9 (Applications): This was very poorly done, with the vast majority deciding that $\cos 240^\circ$ was 2!
- Q10b (units 1,2,3): Many candidates seemed unfamiliar with tan graphs and guessed the wrong answer to this.
- Q7 (Applications): Most candidates did not know how to find the quartiles from the curve but picked up the last mark on a follow-through, using their incorrect quartiles to calculate the semi-interquartile range.

Paper 2:

- Q3c (Both versions): Many candidates drew a boxplot which was difficult to read. Because of the range of numbers involved, candidates would have been well advised to draw the diagram on the squared paper provided or, alternatively, to draw a boxplot with the minimum, maximum and quartiles marked clearly on it.
- Q5 (Both versions): Generally the strategy was sound but too many candidates forgot to round at the end.
- Q7a (Both versions): Most candidates managed only one out of two for this 2-step factorisation.
- Q8 (Units 1,2,3): Disappointing. Too many careless errors in the use of the quadratic formula.
- Q10 (Units 1,2,3): Division of fractions caused many to drop marks.
- Q12 (Units 1,2,3): A sizeable number of candidates realised that the multiplication came to m^{-3} , but could not transfer this to a positive power.
- Q10 (Applications): Very few seemed to understand what the word *order* meant.
- Q13 (Applications): In part (b) the candidates were asked to calculate the mean by '*Using the frequency table in part (a)*'. A substantial number ignored this instruction.

Advice to centres for preparation of future candidates

Hopefully the notes above will help centres target areas for reinforcement.

In summarising:

- When drawing boxplots, a sensible policy would be to use the squared paper provided. Each of the minimum, maximum, median, lower and upper quartiles should be able to be read directly from the diagram. If the scale is not clear enough, candidates should write these values on the boxplot.
- Remember, there may well be a *rounding* instruction in the paper. Candidates should look out for it and follow it. If the rounding is to a certain number of *significant figures*, there will be **one mark** for rounding correctly.
- Sometimes a question asks for a statistical comparison / comment. Candidates should ensure they have a good understanding of measures of central tendency (e.g. mean, median) and measures of spread (e.g. standard deviation, semi-interquartile range) in order to correctly answer this type of question.
- Sloppy work/layout can cost marks, e.g. in the quadratic formula, $-b \pm \sqrt{b^2 - 4ac}$ is **all** over $2a$.

Statistical information: update on Courses

Number of resulted entries in 2006	16,695
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Number of resulted entries in 2007	18,987
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Statistical Information: Performance of candidates

Distribution of Course awards including grade boundaries

Distribution of Course awards	%	Cum %	Number of candidates	Lowest mark
Maximum Mark - 80	-	-	-	-
A	32.9	32.9	6,247	56
B	18.4	51.4	3,503	48
C	16.9	68.2	3,207	40
D	6.8	75.0	1,285	36
No award	25.0	100.0	4,745	-

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.