



Principal Assessor Report 2007

Assessment Panel:

Maths and Science

Qualification area

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

Mathematics Higher

Comments on candidate performance

General comments

Overall candidates scored well in this examination with about half of the candidates scoring between 50% and 77%.

Work continues to be presented in a neat and orderly fashion.

Candidates continue to benefit from the care taken in positioning the challenging questions mainly across Paper 2.

Areas in which candidates performed well

In Paper 1: straight lines (1/1,1/2), composition of functions (1/3), circle problems (1/5) and recurrence relations (1/7). There were good responses to the question (1/8) combining the factorising of a cubic and area under a curve

In Paper 2: there were good responses to the vector angle question (2/1), the use of compound and double angle formulae (2/2), the intersection of a line & circle (2/3) and the trig. graph interpretation (2/4a).

Areas which candidates found demanding

In 1/4 applying the condition for no real roots to the discriminant

In 1/6 taking out a common factor after using the double angle formula

In 1/9 finding the points of intersection of the function with the axes

In 1/9 and 1/11 sketching the appropriate graphs

In 2/4 solving $2 \sin(3x) - 1 = 0$

In 2/6 the proof was not well constructed with many candidates leaping to conclusions. Even less well done was the optimisation part with many candidates failing to even differentiate.

In 2/7 many candidates failed to get even the first three marks where the formula is quoted on the examination paper. Most candidates failed to appreciate that the quoted result is only valid when the angle is given in radians.

In 2/8 the sketches of various exponential functions were very poorly done.

In 2/10 it was disappointing to see so few candidates using a known point to evaluate the constant of integration

Advice to centres for preparation of future candidates

Apart from the details shown in the previous section, some emphasis should be made on the formulae which are quoted at the front of the examination paper, for example this year in particular the formulae for differentiating and integrating the trigonometric functions.

Whilst factorising a complete quadratic was competently handled, many candidates had forgotten how and when to take out a common factor. This technique should be revised at all appropriate stages; in particular it

will occur in about half of the questions involving trig. equations where the double angle formulae are employed.

Many prospective C-grade candidates are missing out on the opportunity of showing they can handle differentiation and max/min determination when they fail to make a start to optimisation questions. The question this year (Paper 2 Question 6) was a typical example and candidates should not be put off by the proof required for part (a); in (b) they have to recognise that they have a function $A(x)$ and maximising $A(x)$ will involve differentiating and a nature table.

The second part of Paper2 Question10 is in fact solving a differential equation and it is important to finish up with an equation of the form $y = F(x) + c$. Substitution of the known coordinates can then be made to determine the value of c .

Statistical information: update on Courses

Number of resulted entries in 2006	18,533
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Number of resulted entries in 2007	18,786
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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 - 130	-	-	-	-
A	24.0	24.0	4,502	101
B	23.4	47.3	4,391	83
C	22.7	70.0	4,261	65
D	8.9	78.9	1,674	56
No award	21.1	100.0	3,958	-

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.