



External Assessment Report 2013

Subject(s)	Mathematics
Level(s)	Intermediate 2

The statistics used in this report are pre-appeal.

This report provides information on the performance of candidates which it is hoped will be useful to teachers/lecturers in their preparation of candidates for future examinations. It is intended to be constructive and informative and to promote better understanding. It would be helpful to read this report in conjunction with the published question papers and marking instructions for the examination.

Comments on candidate performance

General comments

The paper was found to be more accessible to the vast majority of candidates than last year's.

Feedback from centres, candidates and markers suggested that it was set at the correct level and gave candidates a good opportunity to demonstrate the spread and depth of their knowledge of the subject at this level.

Less than 20% of those presented sat the Applications papers. In general, these candidates did not perform as well as the candidates sitting the 1, 2, 3 papers.

Areas in which candidates performed well

Paper 1

- Question 2 (both versions): **Equation of a straight line.** Well done, with most candidates showing detailed working. Some candidates, however, omitted the x in the final equation.
- 6 (both versions): **Quartiles and boxplots.** Most candidates picked up maximum marks for parts a) and b).
- 8 (Apps): **Formulae.** The few candidates who did not receive maximum marks lost one mark because of incorrect calculation.

Paper 2

- 1 (both versions): **Breaking brackets.** Candidates performed well in this opening question.
- 3 (Apps): **Payslip.** Completed correctly by most. Occasionally the pension was incorrectly calculated.
- 3 (1,2,3) and 4 (Apps): **Pie chart.** Generally tackled very well, although some of the diagrams were very 'wobbly' circles!
- 4 (1,2,3) and 7 (Apps): **Cosine Rule.** The main reason for losing marks here was failing to continue beyond calculating ' $\cos x$ '.
- 5 (Apps): **Cost of a loan.** A minority were penalised because they did not continue beyond working out the total paid.
- 6 (1,2,3) and 8 (Apps): **Standard Deviation.** Most responses were completely correct and scored maximum marks for both parts. However, few realised that they did not have to **calculate** the values in part b).

Areas which candidates found demanding

Paper 1

- 3 (Both versions): **Arc of a circle.** Candidates in general knew what calculations to do here, but a great majority calculated $72/360$ to be 5 instead of $1/5$ and so lost the final mark for correct calculation.

- 4 (Both versions): **Simultaneous equations.** Again candidates knew what strategy to use here but there were difficulties in subtracting the equations (or indeed, trying to subtract when they should have been adding). A significant minority left the final answer as $x = 4$, $-y = 2$, instead of $x = 4$, $y = -2$.
- 6 c (Both versions): **Interpreting statistics.** When 2 marks are awarded, candidates are expected to make two comparisons. Many made only one. Often, confusion in expressions meant that marks could not be awarded.
- 7 (Apps): **Tree diagram.** This proved to be a more difficult task than expected. Those who did manage to complete the question often produced very erratic diagrams.
- 8 (1,2,3): **Period of trig equation.** Many candidates gave '2' as the period instead of '180'.
- 9 (Apps): **Reading an ogive.** Candidates often started with the horizontal axis when attempting to read quartiles. Also the fact that the diagram represented **hundreds** of hours escaped many. Despite this, most were awarded the final mark for calculating the SIQR as a 'follow-through'.

Paper 2:

- 2 (Both versions): **Depreciation.** Although candidates on the whole did well in this question, some lost the last mark because they did not explicitly show the value of 'half of the original value'.
- 6 (Apps): **Credit card.** Many candidates were unable to calculate the value of 'A' correctly. Where the minimum payment is £5, candidates should show evidence of how they reached this decision.
- 9 (1,2,3): **Indices.** Mostly confused responses.
- 10 (Both versions): **Trig problem.** Many candidates knew that this problem could be solved using the sine rule followed by a trig calculation in a right-angled triangle. However, many lost the first couple of marks by choosing incorrect values and not communicating clearly enough which triangle they were using. In this type of question it is a good idea for candidates to copy out the diagram and mark in sizes to enable the marker to see clearly which triangle is being used in each calculation.
- 13 (1,2,3): **Solving trig equation in context.** A significant minority of candidates tried to solve this question by using a form of trial and improvement. This method is not recommended at this level. However, where it is used, candidates will be penalised unless they show all trials and results, particularly those immediately above and below the final answer.
- 13 (Apps): **Comparing statistical diagrams.** Most candidates stated an answer to part b), but few showed enough evidence to back up their conclusion.

Advice to centres for preparation of future candidates

Centres deserve credit for the preparation of candidates for the external assessment of Intermediate 2. Candidates are well-schooled in dealing with standard questions. This is seen in the good quality responses to questions such as breaking brackets, finding the equation of a straight line, calculating standard deviation, quartiles, etc. Even more difficult questions such as trigonometrical problems in context (Paper 2, Q10) see candidates making a good attempt to reach a solution.

Some advice that may help candidates pick up more marks:

- ◆ When finding the **equation of a straight line**, candidates should first state the gradient and y-intercept separately, and then combine to state the final equation. In this way, even if the gradient or the y-intercept is wrong, the final mark can still be obtained for an appropriate follow-through.
- ◆ When dealing with **angles in a diagram** (eg Paper 1 Q5, Paper 2 Q10, Q12/11), candidates should make a point of copying out the diagram and filling in the sizes of the angles they will use. In this way the marker can follow the working, and it is easier for marks to be awarded.
- ◆ In **simultaneous equations**, it may be better for candidates to scale towards an **addition** of equations. When candidates attempt to subtract equations, in many cases errors are made.
- ◆ When candidates are required to **draw diagrams** (eg boxplot, pie chart or trig graph), a certain standard of accuracy is expected. **Squared paper** is available, if required, to help candidates produce a more accurate diagram. Where squared paper is used, candidates should ensure they put their name and details on the squared paper. It is also very important that each candidate places the squared paper **inside** his or her answer booklet lest it be misplaced.
- ◆ Always check whether **rounding** is required. When asked to round to significant figures, one mark will be allocated for the calculation and an additional mark for the rounding. When asked to round to any other level of accuracy, there is only one mark for both the calculation **and** the rounding. This mark will not be awarded unless the correct answer has been rounded correctly. It is also good practice to show the unrounded answer as well as the rounded answer.

Statistical information: update on Courses

Intermediate 2 Mathematics

Number of resulted entries in 2012	23536
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Number of resulted entries in 2013	24058
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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	34.9%	34.9%	8394	58
B	20.1%	55.0%	4838	49
C	15.8%	70.8%	3808	41
D	6.8%	77.6%	1631	37
No award	22.4%	100.0%	5387	-

General commentary on grade boundaries

- ◆ While SQA aims to set examinations and create marking instructions which will allow a competent candidate to score a minimum of 50% of the available marks (the notional C boundary) and a well prepared, very competent candidate to score at least 70% of the available marks (the notional A boundary), it is very challenging to get the standard on target every year, in every subject at every level.
- ◆ Each year, SQA therefore holds a grade boundary meeting for each subject at each level where it brings together all the information available (statistical and judgemental). 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 management team at SQA.
- ◆ The grade boundaries can be adjusted downwards if there is evidence that the exam is more challenging than usual, allowing the pass rate to be unaffected by this circumstance.
- ◆ The grade boundaries can be adjusted upwards if there is evidence that the exam is less challenging than usual, allowing the pass rate to be unaffected by this circumstance.
- ◆ Where standards are comparable to previous years, similar grade boundaries are maintained.
- ◆ 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, and the mix of questions, are different. This is also the case for exams set in centres. If SQA has already altered a boundary in a particular year in, say, Higher Chemistry, this 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.
- ◆ SQA's main aim is to be fair to candidates across all subjects and all levels and maintain comparable standards across the years, even as arrangements evolve and change.