



External Assessment Report 2011

Subject	Mathematics
Level	Standard Grade

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

Foundation

The paper was seen as very fair and accessible to candidates. Content was both topical and interesting, allowing candidates to show their mathematical knowledge. Markers rated performances from 'excellent' to 'good' with most questions being attempted. Consistent with previous years, very few candidates scored extremely low marks and a significant number scored highly in both Knowledge and Understanding (KU) and Reasoning and Enquiry (RE).

General

This paper was also perceived as both fair and accessible to General candidates. Questions were clear and straightforward with an appropriate level of challenge. This year, candidates were more consistent with showing required working, and therefore gained marks. Candidates' performances were also rated from 'excellent' to 'good'.

There was an overall increase in the number of General awards this year, with a particular increase in Grade 3.

Credit

This paper proved fair to candidates and was seen as providing good coverage of Credit work. As in previous years, the KU element was better than RE. Credit performances were rated from 'very good' to 'good', although some Markers noted candidates who were obviously ill prepared for this level.

Whilst the percentage of Grade 1 awards was very slightly reduced, there was an increase in the overall percentage of Credit awards.

Areas in which candidates performed well

Foundation

Paper 1

Paper 1 was very well attempted by the majority of candidates. The following questions were particularly well done.

Question 1: Basic number work was sound, giving candidates a good start to the examination.

Question 2: 50% was recognised and correctly used by most candidates.

Question 3: Combinations continue to be well taught and understood.

Question 6: Good reasoning was shown within the unfamiliar context of roman numerals.

Question 8: This time problem was well done, apart from the final communication mark.

Paper 2

In Paper 2, the most successful questions were:

Question 1: A good start to the paper with this money question.

Question 3: Most candidates gained either 3 or 4 marks in the shape reduction task.

Question 6: Completion of a number pattern and forming a rule continues to be well done. Some Markers perceived responses to be improved on previous years.

Question 9: Responses in part (b) showed candidates' understanding of the information presented in the frequency table.

Question 11: An unfamiliar number puzzle allowed candidates to show their reasoning skills.

Question 12: The hire purchase topic showed candidates had been well grounded in this. Their responses indicated good understanding of this topic.

General

Paper 1

Both KU and RE elements were well done in Paper 1. The most successful questions were:

Question 3: Number pattern and rule. This is well taught and candidates perform successfully in this 6 mark reasoning question.

Question 5: Good understanding shown in this area question within the RE element. A variety of strategies were shown here.

Question 6: Candidates performed well working with difference between temperatures.

Question 8: Excellent responses in the calculation of admission charges.

Paper 2

Again Markers noted good responses in both elements. Particular praise went to:

Question 3: Foreign exchange was well understood and well executed.

Question 4: As at Foundation level, combinations have been well practised and candidates are confident with these under examination conditions.

Question 5: Compass direction and bearings were very well understood.

Question 9: Trigonometry was reasonably well done.

Question 11 (a): Most candidates could accurately plot points.

Question 13: There was an improvement from previous years in the completion of the frequency table and the calculation of the mean.

Credit

Paper 1

Paper 1 was well attempted with particular merit seen in:

Question 2: Both common factor and difference of squares were attempted by the majority of candidates.

Question 3: Most candidates avoided the obvious pitfall with the substitution of a negative value.

Question 7: This was an excellent question. Candidates understood how to form and solve simultaneous equations.

Question 8 (a): Finding the equation of a line was done reasonably well this year.

Question 12: Many candidates were successful both in following the given pattern and in establishing a formula.

Paper 2

Question 1: Most candidates got off to a very good start using the more time efficient method for this very familiar Credit question.

Question 3: The use of the quadratic formula continues to improve.

Question 4: Candidates are becoming more confident in the reverse percentage question. Markers noted an improvement on previous years.

Question 5: Candidates performed well in the first 3 marks of the question on arc length.

Question 9: Area and volume were well attempted.

Question 12: Finding coordinates of points on a given trigonometric graph was well done.

Areas which candidates found demanding

Foundation

Paper 1

Question 7: Some candidates omitted part (a) and went straight to part (b), thus losing 2 KU marks. Others completed the graph for Venice but omitted the graph for Stockholm.

Question 8 (a): The most frequent error was the omission of 'pm' in the 12-hour time response.

Question 8 (b): Candidates frequently forgot to respond to the bold '**Give a reason for your answer**'. This continues to be an area for improvement at Foundation level.

Paper 2

Question 4: There was, for some candidates, confusion between area and perimeter. A mark was however available in 4 (b) for a follow-through error.

General

Paper 1

Question 1 (b): Candidates do not all have a basic understanding of multiplication by 100, This area of work may require greater time than is afforded at present to ensure candidates have a secure knowledge of this common and useful calculation.

Question 1 (c): Division of a decimal number by 6 was surprisingly poorly done. Lack of understanding of place value was again evident. Common answers were 0.43 and 0.1043 (where 6 was carried into the tenths column).

Question 4 (a), (b): Some candidates could not extract the mean or median from the given stem and leaf diagram. Candidates should know why we order the data and which values are thus easily obtained.

Question 7: Properties of a kite were not as secure as might be expected.

Paper 2

Question 7: The time calculations were reasonably well done but, as at Foundation level, the final communication mark was frequently lost. Particularly in a 4 mark question, candidates may have done a fair amount of work and assume they should be rushing on to the next question. It is always good practice to review the question and ensure it has been fully answered.

Question 10: In this time question some candidates used their calculators erroneously (using base 10). There was evidence that the required method was understood but the difficulty was in the calculation.

Question 12: Some candidates did not insert a 'height' line to access Pythagoras' theorem.

Question 14: There was confusion between circumference and area of a circle. The final mark was often lost through lack of appropriate rounding.

Credit

Paper 1

Question 4: There was a lack of understanding of how to deal with an algebraic fraction within an equation, a crucial skill for prospective Higher candidates.

Question 5: A variety of methods was employed, with the main problem being fraction calculation work.

Question 8 (b): Some candidates did not realise that the answer to part (a) should have been used in part (b) and therefore resorted to inappropriate strategies.

Question 10: Mathematical proof continues to be poorly attempted. There were some extraordinary 'simplifications' of trigonometric fractions which exposed a lack of understanding of trigonometric expressions. Other candidates did not understand the significance of the given ratio.

Question 11 (b): This showed poor comprehension of the effect of one variable, given changes in the others.

Paper 2

Questions 5 and 6: The final communication mark was frequently lost.

Question 8: Candidates knew to use Pythagoras' theorem but many used a right-angled triangle which did not contain the radius.

Question 10: Another question which exposed difficulties in working with fractions.

Advice to centres for preparation of future candidates

This year there were more successful candidates at all three levels.

Teachers should be congratulated on supporting their candidates in this. It was also encouraging to see a greater variety of problem solving strategies beginning to be shown.

At Foundation level, candidates are well prepared in both elements and ongoing support to encourage them to write their working is allowing the allocation of partial marks throughout the paper.

Confusion between area and perimeter remains a problem at this level and a possible suggestion would be to teach them separately, at different times, to try to improve comprehension.

At General level, candidates are performing well in money, patterns, trigonometry and integer questions. They are showing their mathematical calculations clearly but should be reminded to review each question to ensure they have fully answered it.

Further practice is required in basic non-calculator questions. In statistics, it is important to know both why we order data and the information we can extract from ordered data.

Shape and circle work could also be improved.

Credit candidates have performed well in simultaneous equations, trigonometry, equation of a line, quadratic formula and percentage questions. Good teaching and hard work are evident, allowing candidates to show their understanding in the examination.

Further practice is required in numerical and algebraic fractions, mathematical proof, and in ensuring answers are justified when required.

Statistical information: update on Courses

Number of resulted entries in 2010	43,985
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Number of resulted entries in 2011	42,651
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Statistical information: performance of candidates

Distribution of overall awards

Grade 1	16.6%
Grade 2	15.9%
Grade 3	27.7%
Grade 4	14.5%
Grade 5	18.5%
Grade 6	5.4%
Grade 7	1.3%
No award	0.1%

Grade boundaries for each assessable element in the subject included in the report

Assessable Element	Credit Max Mark	Grade Boundaries		General Max Mark	Grade Boundaries		Foundation Max Mark	Grade Boundaries	
		1	2		3	4		5	6
KU	45	34	22	40	30	21	40	27	19
RE	45	29	19	40	27	19	40	24	16