



**General Certificate Secondary of Education
June 2012**

Applications of Mathematics (Pilot) 93701F

(Specification 9370)

**Unit A1: Applications of Mathematics
(Finance and Statistics) - Foundation**

Report on the Examination

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Unit 1: Foundation Tier

General

The paper was accessible to the target group and there was no evidence of a lack of time to complete the paper. Working was shown clearly for some questions and was within the working space provided. However, in some of the problem solving questions, answers were given with no working; and so if the answer was incorrect no credit could be given without a starting point or method seen.

Topics that were done well included:

- calculating with money or simple quantities
- interpreting a bar chart
- flow diagrams.

Topics which students found challenging included:

- calculating a mean of a frequency distribution
- algebraic expressions
- setting up and solving equations.

Question 1

A common error was to increase the total by 50% instead of finding the increase. Missing out the last rectangle was a common error, as was doubling 26 to get 52. A number of students found the total frequency and stopped there.

Question 2

In part (a)(i) common errors were: to attempt to add 3.15 and 0.9, often leading to 4.05; and to use 1 hour and 20 minutes instead of 1 hour and 30 minutes.

In part (a)(ii) common errors were: students often managed to find 100 minutes or 1h 40 minutes then added to 3.15; students often managed to find 100 minutes or 1h 40 minutes then subtracted from 4.15; students often managed to find 100 minutes or 1h 40 minutes then subtracted from 3.15 incorrectly often as $3.15 - 1.40 = 1.75$, sometimes followed by the final time as 2.15. Also seen was $3.15 - 100 \text{ minutes} = 2.15$. Using decimals for minutes, often as 40 minutes = 0.4 hours, etc was also quite common.

In part (b) the most common incorrect answer came from subtracting 75 from 250 to give 175. Also common was 220, which came from $250 - 30$.

Question 3

There were many good attempts at dual bar charts. The majority had a valid linear scale, although their choice sometimes made it difficult for heights to be plotted accurately: in particular the heights at 5 and 9. It was very common for students to forget to label the vertical axis. Quite a few students plotted points instead of bars, which usually gained two marks.

Part (b) was generally very well done. A few found totals and made no decision or made addition errors.

Question 4

Part (a) was generally very well done as the money/shopping context was accessible to everyone and the calculations were nearly always accurate. Most students gained the QWC mark in part (a)(ii) for correct money notation.

The AO3 question in part (b) was done well by the majority of students. A common error was to stop at 280 and there were some arithmetic errors.

Question 5

Interpreting the pictogram and calculating summary measures caused few problems but there were addition errors in working out the mean. Some students confused mean and median and others found the total frequency as 17, 19 or 20.

Part (b)(iii) was generally well done. Some students went straight to frequency values in the tally column and then often used fx for the frequency column.

Part (c) was generally done well with many students gaining full marks. Most students showed clear working out. Some students found the number of students reading 4 books only.

Question 6

Part (a) was generally done well with no common errors.

Reversing the process in part (b) was not as well done. 1.32 was seen a few times coming from $2.28 - 18/5$, whilst others attempted trial and error/improvement. Some students did not use brackets with $228 - 18/5$, but most of these actually found the correct answer.

Part (c) was generally not well done. The most successful strategy was to find the costs of different lengths of phone calls for each company eventually leading to 63 and then 9 minutes. Many students tried costs for only one of the companies, or just one cost for each company. A number of students were seen to gain 33p in both lists and offer 3 or 4 as their answer. Another error seen regularly was to double the cost of 1 minute to find the cost of 2 minutes, not realising the connection fee was paid only once per call.

Question 7

There was evidence that not all students used a protractor and/or ruler. Fewer than usual had more than the correct number of sectors. A significant number of students failed to gain the mark for correct labelling of the sectors.

The most popular approach in part (b) was to find $\frac{1}{5}$ of 5400 and compare 1080 with 1650, the total from Keswick who were over 60 years of age. It was quite common for students to find 1650 and incorrectly think that this was sufficient to make a conclusion. A number of students did find 1080 and 1650 but failed to make a correct conclusion.

Question 8

There were many good attempts with the most common response being to find the cost of 5 boxes of 6 and 3 boxes of 10 and make a choice. Also quite common was to try 5 boxes of 6, 4 boxes of 8 and 3 boxes of 10 not realising that 4 boxes of 8 was not exactly 30 cards. Many students only considered boxes of one size.

Question 9

Algebraic skills are the weakest for Foundation students. Part (a)(i) was done better than the other parts but some wrote an equation rather than an expression. Part (a)(ii) was not as well done and x^2 was the most common incorrect answer. In part (a)(iii) it was fairly rare to see an equation written and then solved. The majority attempted numerical approaches even though the question clearly requested that an equation be set up and solved. Some of those who did manage to set up an equation then used numerical methods to solve it.

The ration concept in part (b) also caused problems and many divided 575 by 5 to get 115. Other common incorrect answers were 71 from $575 \div 8$ and $575 \div 3 = 191$.

Question 10

There were many non-attempts. Those who attempted to find 10% and $\frac{1}{8}$ of multiples of 10 and 8 had most success. Starting with 10% and $\frac{1}{8}$ of 100 was quite common. Some had difficulty finding 10% and $\frac{1}{8}$, even though they were allowed a calculator.

Question 11

Part (a)(i) was not well done. Again there were many non-attempts. Some students completed the midpoint column but did not then know what to do with them. It was also quite common to see these added up then divided by 3, or added to the 'number of people'. Many who found fx correctly then divided by 3 instead of 50.

Many students could not access part (a)(ii). Quite a few commented on the 24 below and the 26 above rather than use the probability given to compare half of 50 with 26 or the probability 0.52.

In part (b), although quite a lot of students simplified the problem by using a cost of £9 for everyone using the ski slope, there were quite a few good attempts with many students gaining 2 marks or more.

Mark Range and Award of Grades

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