



General Certificate of Secondary Education

Mathematics (Modular) 4302

Specification B

Module 1 Higher Tier 43001H

Report on the Examination

2007 examination - March series

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General

This paper appeared to be accessible to its target group but a small minority of candidates struggled to attempt more than the first question on each section. This may well be the result of centres entering candidates inappropriately for Higher tier in the early sessions of the two-tier specification. The majority of candidates attempted all the questions but often seemed to be more successful on the non-calculator section.

Topics that were well done included:

- simple probability
- plotting and using a scatter diagram
- drawing a frequency polygon.

Topics which candidates found difficult included:

- relative frequency graph
- comparison of two frequency distributions
- probability without replacement.

Question 1

This question was generally answered well by the majority of candidates. In part (b) some candidates obtained the correct answer of 0.68 but then went on to find the probability of a blue marble by calculating $1-0.68$. In both parts (a) and (b) it was not uncommon to see candidates working in whole numbers but then failing to convert these values to probabilities. In part (c) some candidates multiplied by 2 instead of 200.

Question 2

A large number of candidates gained full marks but some lost marks through using class boundaries instead of midpoints or by dividing by 5 instead of 50. A few candidates found the sum of the midpoints then divided by 5 or 50 and there were some instances of $50/5 = 10$ given as the answer.

Question 3

There were a large number of correct responses to this question but answers of 1.6 (the range of the horizontal scale) and answers around 1.8 (the median) were also fairly common. Generally candidates had more success with part (b) but some misreading of the scale led to answers of 11 or 13. There were also a large number of answers of 87, 88 or 89 where candidates did not read the question carefully enough.

Question 4

Many candidates were successful on this question with a small proportion losing the final mark for either leaving the answers as decimals or giving 4,7,8,7 (totalling 26) as their answers. Weaker students usually had little idea how to tackle this question with the method of dividing 25 by 4 leading to either four 6s or 6,6,6,7 in any order, being frequently seen.

Question 5

This question proved to be the most difficult on the paper with few candidates gaining full marks and a large number not attempting the question. Even good candidates generally did not seem to realise that the question involved probability without replacement with the majority of methods using $7/15 \times 3/15$. Those who did understand this concept often then failed to consider both products ie mint, fruit **and** fruit, mint. Weaker students did not know whether to add or multiply and the fractions $1/7$ and $1/3$ were seen in a variety of methods.

Question 6

Responses to this question were generally very good, with a large number of fully correct answers.

Question 7

Whilst the frequency polygon was usually correct in part (a), the comparisons of the two distributions were often lacking. Candidates should be taught that in this type of question one comparison should refer to the average and the other comparison should be about the range or spread of the distributions. Many comments simply compared the numbers of men and women in different classes.

Question 8

In part (a) the value of 0.5 was often identified but given as the answer. In part (b) candidates showed little understanding that better estimates come from a greater number of trials with 0.3 or $1/3$ being common answers (because there were 3 colours). A number also thought that the best estimate was after 20 goes as this had the highest frequency, whilst others attempted to find the average of all the readings.

Question 9

Many candidates found one product correctly but only the better candidates understood the need to add three products together. There was much evidence of fractions incorrectly multiplied or added with $2/5 \times 3/5 = 6/10$ and $4/25 + 6/25 + 6/25 = 16/75$ being common answers.

Question 10

This question could be answered using a variety of methods most of which were seen. Although some candidates did not know where to start or did not attempt the question, those who did could often gain some credit for a partial method. Those who realised that $1\text{cm}^2 = 5$ babies were often the most successful whilst those who tried to work out the frequency density scale usually had least success. A common error was to calculate the number of babies weighing under 2.5kg instead of under 2kg. There were a number of answers without any working which, if incorrect, could not be awarded any method marks.

Mark Ranges and Award of Grades

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