



General Certificate of Secondary Education

Mathematics (Modular) 4307 *Specification B*

Module 1 Higher Tier 43051H

Report on the Examination *2008 examination - March series*

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General

The paper was accessible to its target group as almost every question was attempted with some success. Questions 4(b), 5 and 9(b) challenged many candidates. It was pleasing to see the use of rulers for drawing lines of best fit in question 1(c) although some candidates did not use a ruler for drawing the frequency diagram in question 6(a). There was very little incorrect probability notation seen on this paper. The later questions in each section were beyond the ability of some candidates. A large number of candidates seemed to lack basic arithmetical skills.

Topics that were well done included:

- plotting points on the scatter graph
- drawing a suitable ruled line of best fit
- completing a two-way table
- comparing medians and ranges.

Topics which candidates found difficult included:

- calculating a mean from a frequency table
- calculating a forecast using moving averages
- sampling without replacement
- understanding “at least” in a probability context
- frequency density.

Question 1

Most candidates scored highly on this question. Many plotted their points accurately and drew a suitable ruled line of best fit. In part (b) a significant number of candidates did not mention the strength of the correlation. In part (e) many candidates stated that the line of best fit would not reach the length at 41 rather than explain that this value was outside the given range of the data.

Question 2

This question was well answered. A minority of candidates were let down by poor arithmetic.

Question 3

A number of candidates were unable to attempt the calculation of a mean from a frequency table. Common errors were to divide the total by 6 and $83 \div 6$ was also common. Candidates did not seem to appreciate what the arithmetic mean represents and they gave answers of 24 or 13.8 people per car. Another common mistake was $5 \times 0 = 5$. In part (b) a few candidates referred to times rather than days. Many candidates did not understand a “response section” and gave their own response rather than a section with tick boxes. Writing suitable questions for a questionnaire is a topic for which many candidates appear underprepared.

Question 4

In part (a) plotting the moving averages was generally done well. A few candidates translated the points horizontally by starting their plots at Summer 2006. Part (b) was too challenging for many candidates. Often, candidates obtained the moving average value for Spring 2008 but then gave this as their final answer. Some candidates added another 20 to this value and gave

this as their answer. In part (b) many candidates attempted to add 66 to the Summer 2007 data value as this was the difference between the given summer data values.

Question 5

Many candidates did not realise that the second probability was conditional. The majority of candidates used a denominator of 35 rather than 50 whereas others over complicated the question by drawing a tree diagram with labels for Male and Female and Adult and Child.

Question 6

In part (a) the majority of candidates did not give a linear horizontal scale and wrote 30 – 35, 35 – 40, etc. A few candidates attempted to draw a cumulative frequency curve which was not accepted as a frequency diagram. In part (b) many candidates incorrectly added 8, 6 and 1. They then went on to scale up by a factor of 4, again with arithmetical errors, although a few candidates did manage to obtain 60. In part (c) only a few candidates appreciated that the sample was biased.

Question 7

This question was well done. A number of candidates compared the highest values or the lowest values rather than the range, interquartile range or the medians. Those who correctly identified the interquartile range of the women's neck measurements in part (b) often compared it correctly to the men's interquartile range from the given box plot.

Question 8

Many candidates were distracted in part (a) by the fact that there were 5 yellow sections and went on to explain that the spinner was more likely to land on yellow or gave probabilities of landing on yellow as $\frac{5}{8}$. In part (b) some poor arithmetic, for example $8 \times 8 = 56$ or $4 \times 4 = 8$ was seen but the majority of incorrect answers came from $\frac{2}{8} \times 2$.

Question 9

Part (a) was well done. Common errors seen were 0.4 and 0.6 on the second pair of branches. In part (b) many candidates interpreted "at least" as "exactly one of them was selected". Again poor arithmetic was seen with $0.4 \times 0.3 = 1.2$. Answers with probabilities greater than 1 indicated a lack of understanding by many candidates.

Question 10

There were very few fully correct answers seen. Many candidates simply added the 1.2 and 0.3 without any understanding of what a histogram represents. Frequency density was not well understood. Some candidates attempted to calculate the area involved but they did not know how to scale it to the correct answer. Some candidates who arrived at 11.4 did not round it to an integer.