Principal Examiner Feedback

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GCSE Mathematics (5MB1F)
Paper 01 (Calculator)

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1. PRINCIPAL EXAMINER'S REPORT – FOUNDATION PAPER 1

1.1. GENERAL COMMENTS

This is a calculator paper. It was evident from some work that candidates were attempting the paper without the aid of a calculator. This is not advisable, since calculation errors will cost marks.

Generally the standard of work on this Foundation paper was considered to be an improvement on previous series' of this paper. A greater proportion of candidates were able to make inroads into many of the unstructured questions, whilst still gaining marks on questions which had a more traditional style.

The inclusion of working out to support answers remains an issue.

1.2. REPORT ON INDIVIDUAL QUESTIONS

1.2.1. Question 1

Most candidates were able to present a correct set of frequencies, though it was not uncommon to find some errors occurring. Candidates who only presented tallies (without frequencies) failed to get full marks. Nearly all candidates were able to give the correct answer to part (b).

1.2.2. Question 2

Nearly all candidates gave the correct answer to part (a).

It was therefore surprising when incorrect diagrams were sometimes given in part (b), having demonstrated sound understanding in part (a), even inconsistently in part (b). For example, it was not uncommon to find a correct answer for Friday, and then a diagram similar to that in Tuesday given for Thursday. Most were able to give the correct diagrams for Friday. Whilst some latitude was given for poor diagrams, the size of the single ($\frac{1}{4}$) box in Friday sometimes prevented the award of the mark, particularly when it approximated the size of a full box, though without the internal lines.

1.2.3. Question 3

All three parts were well attempted. Some judgement was required in part (c), but most candidates were able to place their cross near to the point $\frac{1}{4}$ way along the line from 0.

1.2.4. Question 4

Although an abbreviated example of a combination was given, it was surprising to find so many candidates writing the items out in full. This was not penalised. Most candidates planned their answer logically, grouping their responses; these candidates usually gained full marks. A few mis-read the question and only presented pairs of items for three meals, usually the three rows as given in the menu.

1.2.5. Question 5

In part (a) nearly all candidates gained full marks, realising that the column comes half way between 6 and 8 (ie at 7). Only a few read off the column for Andrew in error.

More candidates made an error in reading off the scale in part (b); there was evidence that they looked at the difference for Monday, and approximated this to 5, since this was 4 squares difference. Wednesday was still the most common answer.

Part (c) was also well answered. Candidates either worked towards calculating the totals for Andrew and Rachel or worked immediately on finding the differences for each day. It was encouraging to see working out presented, sometimes on the diagram. This meant nearly all candidates gained some marks from this question, though not always the full 3 marks.

1.2.6. Question 6

Candidates sometimes misread part (a), giving the arrival time of their train rather than the departure time. Most were able to pick the correct train.

In part (b) some made an incorrect assumption that they all took the same time, and only worked out the time for the first train. Poor performance was seen from those candidates who attempted to work out the three separate durations for each train; more successful were those who worked out the duration using the departure and arrival times only. Clear working out facilitated the award of method marks. Far too many candidates lost a mark in not presenting their answer using correct notation. Though the answer line stated "minutes", answers shown as 1 hour 22 minutes were accepted for full marks. But too many candidates wrote answers such as 122 (minutes), 1:22, 1.22, etc., completely oblivious to the need to differentiate between the 1 and the 22 in terms of time units.

There were also far too many incorrect answers given in part (c), with many misreading the question as a requirement to write $\frac{3}{4}$ as a decimal (0.75).

1.2.7. Question 7

Given the unstructured nature of this question, it was well attempted, with most candidates gaining full marks. Presentation was really good, with many choosing to give dual bar charts, and some two combined line graphs. Some presented two separate charts, which was also acceptable. Most also showed the difference between boys and girls on their diagram by use of a key, or labelling. Combining the figures for boys and girls was not appropriate. The main reasons for loss of marks included errors in the heights of bars, a failure to provide consistent labelling, or incomplete diagrams.

1.2.8. Question 8

Predictably the main error(s) was from candidates who confused the terms mean, mode, median and range. Part (a) was well answered.

In part (b) most knew how to calculate the range, though a significant minority presented this as a pair of numbers (eg 1 to 12). What was most disappointing was when candidates stated the correct calculation but then failed to arrive at the correct answer (eg 12 − 1 = 13).

In part (c) attempts to calculate the mean were seen too many times. Some seized on the word "median" and attempted to find the median of the 8 given numbers, which was given some credit if working was shown. Candidates who attempted to find the median from an unordered list were also given some credit, where this was clear from working; undertaking an attempt with the given numbers at the top of the page was frequently unhelpful, since it was not always clear whether this work was associated with their answer to part (c).

1.2.9. Question 9

Many presented the acceptable three-column table for part (a). Sometimes marks were lost because candidates did not make clear what the three columns were for, either by using column headings, or putting in some data. Bar charts, line graphs or questions for questionnaires were all unacceptable, particular as the question made clear that a table was needed.

Part (b) was less well answered, with only the minority able to express reasons for bias. Many incorrect answers related to cars which failed to stop, people who were going to the airport but not flying, or responses unrelated to bias. Better answers referred to other means of transport to airports, the need to sample at other times or locations, or undue focus on cars alone.

1.2.10. Question 10

It was encouraging to see so many good attempts at this unstructured question, with most candidates setting out working in an ordered fashion, earning marks as a result.

The most common errors included the choice of the wrong column in the tables, classification of both children in the same age group, inclusion of only one adult, or failure to include calculations form all three hotels. Whilst totals were always shown, the names of the hotels to which their totals were associated was not always given; sometimes totals were given and no conclusion stated. Credit was given where totals were incorrect, but a correct conclusion was given using their totals.

1.2.11. Question 11

There is clear evidence that many candidates attempting this question were doing so without the aid of a protractor. Drawing angles of 40, 56, 24 resulted in four sectors, which did not appear to bother some candidates. The majority drew a pie chart with three sectors that only approximated to the proportions of the number of students in each category.

Part (b) was also poorly answered, with too many answers referring to the sizes of the sectors or angles, rather than focussing on the actual number of students (which we did not know). Although most tried to justify a reason for "no", there were equally some acceptable justifications for an answer of "yes".

1.2.12. Question 12

A familiar style of question that was well answered. In part (a) it was usually only the inability of candidates to process the decimal calculations correctly that prevented them from gaining full marks.

In part (b) candidates should be more careful when picking out the decimal from the table to use; in this case the one for red was needed. Some incorrectly gave their answer as a probability rather than as a number.

1.2.13. Question 13

Most candidates gained at least 1 mark from each part of this question. Many responses in part (a) referred to the fact the boxes either overlapped or were not exhaustive; less common were references to time frame, or the fact that it was not clear over which period of time the survey was being taken.

Sometime criticisms made in part (a) were not addressed in answers to part (b), but most answers included both text and response boxes. Centres are reminded that inclusion of mathematical inequality symbolism as labels will not result in a question that is "fit for purpose" in real life.

1.2.14. Question 14

It was surprising when candidates failed to plot the points in part (a).

In part (b) the only error worth noting was descriptions of the relationship rather than the correlation. Lines of best fit need to be drawn for the full set of data; short lines will not show the complete relationship. Most lines were acceptable and were used successfully in part (d) in making the required estimate.

1.2.15. Question 15

Division by a ratio is traditionally poorly done, and this was no exception. Division of 2, 3, 7 separately into 60 was the most common incorrect response, along with incomplete trial and improvement methods. But candidates rarely demonstrated little understanding of what was actually needed in terms of mathematical process. Failure to attempt the question was also not uncommon.

1.2.16. Question 16

Many attempted an addition of the algebraic terms, though it was not always clear whether this showed understanding of working towards the mean. Where this was done, some credit was given. Many better candidates made the error of expressing their answer ambiguously, for example as $4x + 3 \div 3$. There were very few completely correct answers. But this was the last question on the paper.

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