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Examiners' Report
March 2013

GCSE Mathematics 5MB1F
Foundation (Calculator)
Paper 1

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Introduction

The paper proved to be accessible with the majority of the candidates attempting all the questions.

It was pleasing that many candidates showed sufficient working out to gain method marks when the final answer was incorrect. Working was often well set out.

Candidates must take particular care with questions in which the quality of written communication (QWC) is to be assessed. They should always make sure that full working is shown to demonstrate answers to the actual question set and include appropriate units when necessary. In both Q8 and Q15, many candidates lost marks through failing to indicate that their answers were in pounds (£).

Report on individual questions

Question 1

The majority of candidates completed the frequency table correctly in part (a). A few tallies were inaccurate and a few candidates did not complete the frequency column.

In part (b), the mode was well understood. A common incorrect answer was 7. Some candidates wrote both bus and 7 on the answer line and received no credit.

Question 2

In part (a), the majority of candidates knew that the median was the middle number even if they tried to find the median without ordering the list. Many candidates did order the numbers with most then able to give the correct answer. Some failed to order all the numbers. Those candidates who did not order the numbers often gave 2 as the answer. If it was clear from the working that 2 had been chosen because it was the middle number, then a method mark was awarded.

Part (b) was answered very well with many candidates able to find the range correctly, often with 9 − 1 shown in the working space.

Question 3

All three parts of this question were answered very well. Incorrect answers were often the result of candidates giving an imperial unit rather than a metric unit, with the most common ones being pounds in part (a), gallons in part (b) and feet in part (c).

Question 4

Most candidates were able to demonstrate a good understanding of pictograms. Part (a) was answered extremely well with candidates using the key correctly to find the number of goals.

Almost as many candidates gave the correct number of goals in part (b).

Part (c) was also answered very well with the majority of candidates completing the pictogram correctly. The most common error was showing seven goals, rather than one goal, for Match 7.

Question 5

Almost all candidates were able to write down the price of the card in part (a).

Part (b) was also answered very well. Some candidates made an error when adding 1.15 and 2.49, but incorrect answers were often due to candidates not using the two correct prices from the table.

In part (c), many candidates gave the two correct codes, although a significant number wrote down the prices of the two cards rather than the codes and could only be awarded one mark. Candidates who gave an incorrect pair of codes were awarded one mark if they had added two prices in an attempt to find a total cost of £3.94.

Question 6

It was pleasing that most candidates wrote down a probability using numbers with few candidates using words such as 'unlikely'. Many gave the correct answer. Some candidates wrote the probability using incorrect notation, giving answers such as 1 out of 8 and 1:8, and gained no credit.

Question 7

Part (a) was answered very well with the majority of candidates marking the probability at 0.5.

Candidates were less successful in part (b). Many did mark the probability between 0 and 0.5 but often the cross was placed too close to 0 or too close to 0.5. Those who sub-divided the scale into six parts were usually successful.

Part (c) was answered well. The most common error was to mark the probability at 0 rather than at 1.

Question 8

It was pleasing that many fully correct solutions were seen. These were often well presented with working out that was easy to follow. Most candidates realised that they needed to compare the cost of buying the pencils singly with the cost of buying them in boxes. This was most commonly done by working out the cost of three boxes and the cost of 36 single pencils. Some candidates did not gain full marks because they failed to include the £ sign with their answer, simply stating that Oliver spent 4.32. Quite a common error was to use only one way to find the cost of 36 pencils and often this was calculating the cost of three boxes.

Question 9

Both part (a) and part (b) were answered extremely well. Incorrect answers were usually the result of failing to read the question properly, eg using 2005 rather than 2006 in part (a) and giving the greatest profit rather than the year in which the company made the most profit in part (b).

Although the explanation was not always well written, most candidates were able to indicate in part (c) that the profit increased in the given time period. The exceptions were when candidates focused on finding the numerical values rather than describing the change in profit from 2009 to 2012.

Question 10

This question was generally answered well. A large number of candidates opted for a trial and error approach and many were able to reach the correct final answer. It was, however, quite common to see 6 (the mean) given as the final answer after correct working had been shown. Some candidates added the three numbers given but did not know how to proceed with some dividing the total by 3. Those who gained no marks generally just wrote a number, eg 5, that looked like it fitted the pattern of the given cards.

Question 11

The vast majority of candidates had some idea about listing combinations and most wrote down all nine possible combinations. Most of the lists were systematic and written in a logical order. Some candidates wrote the nine correct combinations but also listed some repeats. A few candidates listed only (P, A) and (F, S).

Question 12

Overall, this question was well attempted with most candidates choosing to present the data using a dual bar chart, with the months labelled along the bottom and mostly with a key given for minimum and maximum temperatures. The bars were usually drawn at the correct heights. Line graphs were quite common and some compound bar charts were also drawn. Some candidates drew a scatter graph, which is not a suitable diagram for the comparison of minimum and maximum temperatures. It was very common for candidates to lose the final mark through not labelling the temperature axis or for labelling it incorrectly, eg with 'frequency'. Some candidates might have gained more marks if they had considered the size of the grid provided when deciding on the scale for the vertical axis; some used 2 cm to 3°, which made it harder to plot accurately, while others used 1 cm to 1° and did not have enough space.

Question 13

This question was not answered as well as might have been expected. Most commonly, candidates began by working out $\frac{1}{10}$ of 700 as 70 and then attempted to work out $\frac{1}{5}$ of 700. Many candidates did this by finding half of 70 and '$\frac{1}{5}$ of 700 = 35' was a very common error. Candidates did usually go on to add the number of 16-year olds to the number of 18-year olds and subtract the total from 700. Those who decided to work with fractions could often add $\frac{1}{10}$ and $\frac{1}{5}$ to get House style fraction and then subtract this from 1. Many candidates who used this approach, however, then gave $\frac{7}{10}$ as the final answer although the question asked **how many** of the students are 17 years old.

Question 14

This question was answered surprisingly poorly. Many candidates gave an incorrect answer with no working and got no marks. Those who first wrote down separate expressions for the number of pets Agatha and Isabel each had could often be awarded one mark for a correct expression. Common errors included writing x^2 rather than $2x$ for the number of pets Agatha had and either $3x$ or x^3 instead of $x + 3$ for the number of pets Isabel had. Some candidates wrote the correct expressions but did not add them or forgot to add x for Katie. Many candidates did not appear to appreciate that Isabel had three more pets than Katie or that the question asked for the **total number** of pets. A very common incorrect answer was $2x + 3$. Some candidates wrote $\times 2 + 3$ or tried to substitute numbers to give the total number of pets.

Question 15

This question was very well attempted. Many candidates had a good structure to the way they presented their answers and invariably these candidates tended to be the most successful. The majority of candidates identified the correct flight costs for the adults and worked out either the total cost for two adults one way or for one adult there and back.

The biggest stumbling block proved to be calculating a child fare as 75% of an adult fare. Many candidates did this incorrectly, sometimes showing no method, and others tried to calculate 75% of the cost of two adults one way despite the fact that this made the child fare more expensive that the adult fare. Some candidates correctly found the percentage but then went on to subtract it from the total (taking the child fare to be 75% **off** an adult fare rather than 75% **of** the adult fare). A surprising number of candidates tried to deduct the 75% in some way from the total cost of the adults, making the holiday cheaper if a child went too than if only two adults went.

Many candidates did get as far as finding a total cost for the flights but the final mark was often lost, either because no answer was given to the question ('Do they have enough money for the flights?') or because the total cost was given without a £ sign.

Question 16

Candidates who chose to answer this question by drawing a two-way table generally had the most success, although this was a minority. When candidates did not use a table, working was often difficult to follow. A significant number of candidates correctly worked out the number of girls with twin-tipped skis but then failed to add this to the seven boys with twin-tipped skis. Some candidates worked out that there were 17 girls but were unable to make any further progress. Candidates who were less successful tended to combine the data for the boys and the data for the girls.

Question 17

Part (a) was well attempted with the majority of candidates writing down two things that they thought were wrong with the question. Many candidates were able to give at least one valid thing wrong. The fact that the response boxes were not exhaustive and the lack of a time period were frequently identified. The vagueness of the response boxes was also commented on by many candidates. Some answers were too brief. 'It's too vague', for example, does not tell us what it refers to.

Many candidates were able to design a better question in part (b). Some, though, failed to include a time frame for frequency of use and some used the same type of non-specific response boxes that were given in part (a).

Part (c) was generally answered quite well, although some candidates did not achieve any marks as they focused on the subject of the questionnaire rather than the methodology of how the sample was being taken.

Summary

Based on their performance on the paper, candidates should:

- read questions fully and carefully before attempting to answer them
- show working out to support the final answer
- write a concluding sentence when a question requires a decision to be made
- include appropriate units with answers
- choose a suitable linear scale when drawing a bar chart and label the axes
- use correct notation when writing a probability, ie write it as a fraction, decimal or percentage.

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