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Principal Examiner Feedback

June 2011

GCSE Mathematics (2MB01)

Unit 1: 5MB1F_01
Foundation (Calculator)

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1. PRINCIPAL EXAMINER'S REPORT – FOUNDATION PAPER 1

1.1. GENERAL COMMENTS

1.1.1. This paper included a number of unstructured multi-step questions which required candidates to plan a strategy and then set out working in a logical fashion. Candidates need to be encouraged to present their working clearly in part to enable them to structure a logical process and check it themselves.

1.1.2. Centres should encourage students to use their time effectively, not rush through questions and take care to check their work. Careful initial reading will ensure that crucial details are not misread and all question parts are attempted.

1.1.3. Candidates must take careful note where questions are starred to indicate Quality of Written Communication is to be assessed. For all examination work they should always make sure that full working is shown to demonstrate answers to the actual question set. In the case of statistical comparisons such as Q14b, care needs to be taken to not only quote and interpret statistics but also relate them back to the context of the data.

1.2. REPORT ON INDIVIDUAL QUESTIONS

1.2.1. Question 1

Most candidates displayed a good understanding of this question. They were able show the correct tally of the number of coins and their corresponding frequencies. Some errors noted include cases where in part (a) some students wrote the total value of each type of coin instead of their frequencies and in part (b) some students simply gave the total number of coins i.e. 20 as the total value of the coins. Some also added each type of coin i.e. 10+20+50+1.00 giving their final answer as £1.80. However, the most common error was in part (b) where many candidates assumed that 'work out the total value of the 20 coins' meant 'find the total value of the 20p coins' thus giving an answer of £1.60.

In this question, correct money notation was required for award of the final mark. Hence neither £30.1 with omission of the final zero nor incorrect use of a colon in £10:30 were acceptable.

1.2.2. Question 2

Over 95% of candidates correctly identified which camera cost most in part (a). In part (b) the success rate dropped to about 70% mainly because many candidates gave both A and C as the 2 cameras which cost less than £200 and did not go on to identify A as the heaviest.

Parts (c), (d) and (e) relating to the pictogram were all very well answered.

1.2.3. Question 3

Over 90% of candidates interpreted the dual bar chart and key correctly and identified Monday and Friday in part (a).

In part (b), the majority of candidates attempted an addition of both Viv and Alfie's working hours rather than calculate the difference for each day and then add the differences. For those who added the total working hours, the majority correctly read the values from the dual-bar chart but there were many errors in the ensuing addition. The half hours involved caused problems and some who found correct totals of 29.5 and 31.5 then gave 2.5 hours as the difference between them. Where candidates tried to find the difference for each day the most common observed error was students considering only Wednesday and Thursday when Alfie worked longer than Viv giving 3½ hours. Without doubt, candidates who presented clear structured working were more likely to reach accurate answers.

1.2.4. Question 4

Candidates were very successful in part (a) with well over 90% scoring the marks.

In part (b) 50% of candidates gained full marks, although a significant proportion had the repeats showing every outcome in reverse which were condoned. Systematic listing or use of a table ensured few errors with only a few candidates missing a combination. Many of those who gained only 1 mark did so because they considered 2 spins of just Steve's lettered spinner although several lost this mark as well due to missing out the AA, BB and CC outcomes.

Other errors included giving outcomes for individual spinners only or attempting to give a probability for various outcomes.

1.2.5. Question 5

Confusion between range and the averages caused problems for candidates in this question. In part (a) 50% found the correct range but others found the difference between the first and last temperatures listed. 6 was a common incorrect answer from incorrect selection of either 10 and 16 or 12 and 18 as the lowest and highest values. A single mark was rarely awarded although 10-18 was occasionally seen.

75% of candidates correctly gave the mode in part (b) with others usually giving an incorrect average. In part (c), about 50% of candidates calculated the correct mean but many gave another average, often the median, instead. Typical errors with calculator use led to an answer of 124.6 and others rounded the final answer to 14. In both cases it was essential for working or a previous answer of 13.9 to be seen for the award of marks.

1.2.6. Question 6

Over 50% of candidates gave the correct fraction for Rovers in part (a) but others gave the angle 90° instead. In part (a) candidates were often successful calculating the 120° angle but then failed to find the 6° per person and make further progress. Candidates who did reach the correct final answer often did so by working with directly with ratio, for example scaling 120:20 down to 30:5 and then up to 90:15 This type of approach was often shown in a table format.

1.2.7. Question 7

Just over 50% of candidates answered correctly, sometimes showing the individual programme durations on the schedule or a time line. Some candidates appeared to add 15.05 and 15.35 together with 30.40 seen as a final answer. Fifty minutes was another common response, being calculated as the time from the beginning of CBeebies to the end of Jakers; a few even showed their working as adding all three programmes together.

1.2.8. Question 8

The majority of candidates demonstrated their understanding of the two-way table by completing it accurately but only 25% then went on to give a correct probability of 5/24. An incorrect denominator was often used with total boys or total walking given leading to 5/13 or 5/7. Students also need to understand that at this level, where a numerical value can be obtained, it is inappropriate to describe a probability using words.

1.2.9. Question 9

In parts (a) and (b) the scale with 0.4 divisions caused difficulties for candidates who had made correct attempts to read off the conversion graphs so only about 30% were awarded the mark for each.

Candidates clearly struggled with the compound problem in part (c) although 10% did achieve the full 4 marks. Where candidates showed a correct process to change dollars to euros then euros to pounds, some then failed to scale up to 65 dollars; there were often instances of euros or pounds being scaled to 65 instead. This was another question where candidates showing all stages of their working and setting them out in a logical manner, helped ensure accuracy in their final answer.

1.2.10. Question 10

Just over 70% of candidates scored 4 or 5 marks with an equal split between those reaching the correct final answer of £67 and others losing a mark as their final costing was not this cheapest option. It should be noted that this was not a starred question so on this occasion there was not a requirement to demonstrate that £67 was the cheapest way to buy tickets. Errors usually occurred when dealing with the group tickets or identifying the ticket types required particularly where Samantha needed an adult ticket and Finlay's was free. Again clarity in working led to the highest levels of accuracy.

1.2.11. Question 11

In part (a), most candidates understood what a stem and leaf diagram entailed. The most common mistakes included omitting a key and providing an unordered diagram. Around a quarter of candidates scored no marks but typically did so by either giving a tally in each row or showing full numbers rather than just the units. Students need to be reminded to count the number of pieces of data in the question and to check they have the same number in the completed diagram.

Following on from part (a), many candidates drew a stem and leaf diagram for the boys in part (b). In these instances the majority did not use their diagram to identify key features of the data such as median and range and therefore failed to make a valid comparison. Candidates who carried out calculations often included the mode and median and were awarded marks for the median. At this level, weaker candidates calculated the range but were unable to interpret it as 'spread' correctly. Candidates who calculated the mean were generally able to give a valid comparison. A significant number scored 0 as a result of only comparing the smallest and tallest boy/girl or by making other unqualified statements having completed no calculations.

In a starred question such as this it is essential that students understand that any comparative statements must involve quotation of statistics, their interpretation and a clear link back to the context of the data, in this case the heights of the boys and the girls.

1.2.12. Question 12

Two thirds of candidates gained 3 or 4 marks on this question. A number of otherwise correct responses showed no plotting for part (a) where candidates had presumably simply missed out this question part. In part (c) relatively few drew a line of best fit and although on this occasion correct answers in range were awarded full marks, students should be encouraged to do so.

1.2.13. Question 13

Performance on this question was very poor with 95% of candidates scoring no marks at all. In part (a) there was a common assumption was that P(2) and P(3) were equal leading to evaluation of 0.3 for each. Where candidates did use 1 as the sum of the probabilities, they were unable to provide a correct algebraic expression.

Candidates had marginally more success with part (b) but the correct expression was very rarely seen and more often a numerical value calculated in part (a) was used.

1.2.14. Question 14

About 25% of candidates gave 2 valid responses and around 40% just one correct criticism. The overlapping boxes for question 1 were often identified and described. Reference to this question being too personal was also an acceptable criticism. Among incorrect answers were statements that the age of a person had no relevance to a questionnaire about healthy eating and that the age intervals were too large. For question 2, bias was recognised but candidates described this at length rather than just state that the question was “biased” or “leading”. Learning this correct vocabulary would clearly help students make valid criticisms efficiently.

1.3 GRADE BOUNDARIES

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