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Principal Examiner Feedback

Summer 2016

Pearson Edexcel GCSE
In Mathematics B (2MB01)
Foundation (Calculator) Unit 1

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GCSE Mathematics 2MB01
Principal Examiner Feedback – Foundation Paper Unit 1

Introduction

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

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

Many students were unable to write down a correct algebraic expression in Q16 from the information given.

Report on individual questions

Question 1

In part (a) many students chose 'likely' rather than 'evens' but almost all students chose 'impossible' in part (b). Part (c) was generally answered well with the majority of students marking the probability at 0.25. Some students marked it at 0.5 and some marked it above 0.5

Question 2

Most students were able to demonstrate a good understanding of pictograms. Part (a) was answered extremely well with most candidates using the key correctly to find the number of points that Fred scored. Almost as many students worked out the total number of points correctly in part (b).

Question 3

Many students were able to write flavours on the sweets so that Jane is twice as likely to take an orange sweet as a lemon sweet. However, it was common to see either an equal number of orange sweets and lemon sweets or for the number of lemon sweets to be double the number of orange sweets.

Question 4

Many students were able to work out that the latest train John can catch leaves Fratton at 21 58. A common error was to give an answer of 22 05 which is the time the train arrives at Portsmouth Harbour. Another common incorrect answer was 22 08. Some students subtracted 8 minutes from 22 15 to get 22 07 and then chose the 22 08 train but often incorrect answers were given with no working shown.

Question 5

This question was well answered with most students choosing to present the data using a dual bar chart, with the days labelled along the bottom and with a key given. The bars were usually drawn at the correct heights although some students used a scale that made plotting tricky. It was very common for students to lose the final mark through not labelling the temperature axis or for labelling it incorrectly, for example with 'frequency'. A small number of students drew line graphs or compound bar charts.

In part (b) many students were able to write a statement to the effect that the temperatures in Nice were higher than the temperatures in Paris. A common error was to give no comparison of the temperatures. Some students, for example, simply worked out the difference in temperature for each day and made no statement.

Question 6

The frequency table in part (a) was completed correctly by most students. When one of the frequencies was incorrect it was often the one for dogs. Students could have checked that the sum of their frequencies was 18.

In part (b) the mode was generally well understood. Incorrect answers included 7 (the range of the frequencies) and 45 (the sum of the frequencies).

Question 7

Generally, this question was answered quite poorly. Many students appreciated the need to subtract the three lengths from 10 metres but they were often unable to cope with the mix of centimetres and metres. Many of the students who showed knowledge of 100 cm = 1 m failed to change all the measurements into the same units. It was common to see 1000 − 41 − 3.7 − 112 = 843.3 (with 3.7 m treated as 3.7 cm even though 10 m has been changed into 1000 cm). The attempts at conversion often resulted in errors such as 3.7 m = 307 cm, 112 cm = 1.2 m, etc. Some of the students who carried out the conversions correctly and arrived at a result of 4.77 or 477 lost the final mark because they failed to include the correct units with their answer.

Question 8

Almost all students had some idea about listing combinations and many of the lists were systematic and written in a logical order. Many students wrote down just the 6 possible combinations of flavours. A very common error was to write down each combination twice, listing, for example, both 'vanilla and mint' and 'mint and vanilla'.

Question 9

Almost all students were successful in part (a) and in part (b).

In part (c) some students chose to start by dividing £3700 by 16 but the most common approach seen was to multiply the cost of each machine by 16 and compare the results with £3700. Although many students did identify all three types of sewing machine Miss Searle could choose to buy it was very common to see only one of them identified. Some students carried out calculations for each type of machine but then only chose one machine as the final answer. Often, though, students had multiplied only one cost by 16 and, if the result was less than £3700, had given this type of machine as the answer.

Question 10

In part (a) the vast majority of students were able to interpret the graph to find the population in 1991. Students were a little less successful in part (b). Common incorrect answers were 4 (not taking into account that the vertical scale represents population in 1000s) and 2000

Question 11

Part (a) was answered quite well with many students able to find the range correctly.

In part (b) it was clear that the majority of students knew that the median is the middle number but a surprising number of students failed to work it out correctly. Common incorrect answers were 35, 36, 5 and 6. Some of those who identified the two middle numbers as 35 and 36 gave the answer as 5.5 or as '35, 36'. Many students chose to write out the 24 numbers in a list even though the data is ordered in the stem and leaf diagram.

Part (c) was answered quite well.

Question 12

When the answer to part (a) was given as a fraction this was usually $\frac{1}{4}$. Many of the answers given, however, were not fractions and 90° was a common incorrect answer.

In part (b) students could often work out that the size of the sector for 15 years is 95° but many got no further. Those who used the information given to work out that 5° represents each student usually gave fully correct answers.

Question 13

Most students were able to work out the total cost using the normal admission prices although £6.25, not £8.25, was sometimes used as the price for children. Students were less successful when working out the cost using the group rate. A very common error was to include 4 × £2.50, not 2 × £2.50, for the adults. Most students finished by finding the difference between their two totals although a small number gave the cheaper total cost as the final answer.

Question 14

Part (a) was answered extremely well with the majority of students able to plot the point at (8.5, 35).

Fewer students than might have been expected identified the correlation as positive in part (b). A common error was to describe the relationship between hours of sunshine and number of children instead of describing the correlation.

Many students answered part (c) correctly, often without drawing a line of best fit. Students should be encouraged to show a clear method on the graph as, without this, answers just outside the required range cannot be awarded any marks.

Question 15

Most students were able to complete the two-way table correctly.

Question 16

This question was answered very poorly. Students struggled to write correct expressions for Bob's height and Cath's height. Those who did write $x + 10$ and $x - 4$ often got no further. Some used $10x$ rather than $x + 10$ and it was common to see just the single expression $x + 10 - 4$ which gained no marks. Very few students attempted to divide their total by 3

Question 17

Students who first multiplied 0.03 by 1800 to find an estimate for the number of faulty bulbs often went on to subtract the result from 1800 although some went no further and gave 54 as the final answer. Some students started by finding the probability of a bulb not being faulty and then multiplied this by 1800. Many students did not know what to do with 0.03 and 1800 which meant that both 1800 − 0.03 and 1800 ÷ 0.03 were frequently seen.

Question 18

Most students were able to make a start by multiplying £23.50 by 1000 to work out the money raised by ticket sales and it was pleasing that a number were able to go on and give fully correct solutions. Solutions were usually well presented with the working easy to follow. Many students made errors at some point in the question. It was quite common to see the result of the initial multiplication given as 235.00 or as 2350.0. Some students found $\frac{1}{20}$ of 23 500 but did not subtract it from 23 500 and there were some who could not find $\frac{1}{20}$ of 23 500. The most common mistake here was to work out 20% rather than $\frac{1}{20}$. Students who got as far as finding the amount that was left to give to the school and to the hospital were often unable to divide it in the ratio 2: 3. Some, for example, divided the amount by 2 and by 3 and some divided it by 3 and multiplied the result by 2

Summary

Based on their performance in this paper, students should:

- label the axes when drawing a bar chart

- practise converting between centimetres and metres

- consider whether units should be given with the final answer when no units are given on the answer line

- show their method when using a scatter graph to estimate a value

- practise writing algebraic expressions

Grade Boundaries

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