

# Principal Examiner Feedback

March 2011

GCSE

## GCSE Mathematics (2MB01)

### Foundation Paper 01

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# 1 PRINCIPAL EXAMINER'S REPORT - FOUNDATION PAPER 1

## 1.1 GENERAL COMMENTS

1.1.1 This paper was accessible and the majority of candidates were able to score well on the early questions.

1.1.2 Once again poor arithmetic prevents many candidates securing the marks that their mathematical understanding deserves even when the use of a calculator is permitted. This was particularly evident in questions 6c, 7, 12 and 14.

1.1.3 It is clear that many centres have still not got a full understanding of the demands of the QWC, quality of written communication, element of the specification.

## 1.2 REPORT ON INDIVIDUAL QUESTIONS

### 1.2.1 Question 1

The most common error in this question was made by candidates misinterpreting the key and assuming that the 4-square shape represented 4 parcels instead of 8. Many gave an answer of (a) 20, (b) 14 and (c) (i) 6 shapes and (ii)  $4\frac{1}{2}$  shapes. Another common error in (c)(ii) was to draw diagrams representing 20, instead of 18.

### 1.2.2 Question 2

In part (a), incorrect answers of 115 and 155 were common.

Part (b)(i) was usually correctly answered, although 'am' was sometimes seen instead of 'pm'. This gained no credit. In part (ii) 20 15 and 22 15 were the most common mistakes made.

Part (c) was not very well answered at all. Many candidates were able to find the number of minutes both Lucy (30) and Saad (40) were in the café; this was often followed by an answer of 70 minutes or 10 minutes. The more able candidates were able to find the required time often without the need to show their working. This is however a risky strategy since they would gain full credit or none at all.

### 1.2.3 Question 3

In part (a), very few candidates failed to gain full credit.

Part (b) was less successful with many candidates re-defining 'Outdoor Activity' and selecting just 2 or 3 of the given activities. The sum was then usually calculated without showing any working and so gaining no credit. An incorrect answer of 21 was also common.

The bar chart in part (c) was usually correctly completed. It was pleasing to see the use of rulers in the drawing of the bar.

**1.2.4 Question 4**  
Parts (a) and (b) were usually correctly answered, although Abby was often included in the list in part (b).

In part (c),  $\frac{2}{4}$  and  $\frac{1}{6}$  were the most common incorrect answers offered.

Many candidates lost marks because of incorrect notation eg. 2 out of 6, 2:6. Some tried to cancel but offered an alternative answer, using OR not equals, and therefore losing the marks; for example  $2/6$  or  $\frac{1}{2}$

**1.2.5 Question 5**  
Surprisingly, parts (a) and (b) of this question were poorly answered. In (a), the cross was often placed between  $\frac{1}{2}$  and 1. A lack of accuracy in positioning the cross in part (b) accounted for many unsuccessful attempts. Part (c) usually gained full credit.

**1.2.6 Question 6**  
Most candidates were able to gain at least 1 mark in part (a) for partially completing the tally chart. Full marks were often denied because of carelessness in transferring the given data. Other common errors included frequency columns of 3 ( $1 \times 3$ ), 14 ( $2 \times 7$ ), etc. and 3, 10 ( $3+7$ ), 15 ( $3+7+5$ ), etc. and  $3/20$ ,  $7/20$ , etc.

In part (b), a common mistake was to give an answer of 7, the frequency of the mode 2, or 3 since in the frequency column the number 3 appeared more times than any other number.

Part (c) was well answered by the more able candidate. However many candidates merely added the 6 numbers to give an answer of 114.

96.5 was also a common answer to part (c), by candidates failing to apply the correct order of operations. This did however gain 1 mark. Very many candidates actually found the median, which was also 19. This gained no credit. However an answer alone of 19 with no working did gain full credit. Clearly some candidates may have been very fortunate in this respect.

**1.2.7 Question 7**  
Most candidates were able to gain some credit in this question, usually for correctly calculating 25% of 200. Having established an answer of 50 men, many candidates then went on to work out one fifth of 150 ( $200 - 50$ ), giving an answer of 30 women. If a final answer of 120 ( $200 - 50 - 30$ ) followed, 2 out of the 3 marks were awarded.

A few candidates worked in percentages giving a final answer of 55%. This gained one mark only; they were required to find 55% of 200 to gain further credit. An even smaller number of candidates worked in decimals, usually unsuccessfully.

- 1.2.8 Question 8**  
This question was usually well done and the required 12 pairings (often repeated in reverse order) was seen more than not. However a significant number of candidates then offered extra incorrect combinations which then prevented the award of full credit.
- A significant number of candidates wrote, C,1,2,3,4 and A,1,2,3,4, etc. perhaps thinking that this was an acceptable shorthand notation for the 12 possible combinations.
- Weaker candidates thought CAT1.CAT2 etc. were the combinations required the word followed by the number.
- 1.2.9 Question 9**  
In part (a), whilst correctly answered by the majority of candidates, 19 (30km into miles), 52 and 58 were common mistakes. Part (b) was usually answered correctly.
- In part (c) it was rare to see any working supporting an answer which was often outside the acceptable range. 150 was a typical example of this where, it is presumed, candidates read 10 miles = 15 km from the graph and then used a scale factor of 10. Since this would have been assuming a 2-stage operation, no credit was given.
- Many candidates calculated the conversion by a form of a 'build up' method, taking several readings from the graph. This had mixed success. Another popular error was to read off 10 miles correctly as 16 km but then because  $10^2$  is 100 their reading of 16 was also squared. A significant number of candidates attempted to convert 100 km into miles.
- 1.2.10 Question 10**  
Part (a) was generally correctly answered, careless rather than conceptual errors accounting for the greater number of mistakes.
- Part (b) was poorly answered, clearly showing a lack of understanding of the ordering of information in a stem and leaf diagram. 3 and 22.5 were the most common errors here.
- Only a half of the candidature was able to correctly find the range in part (c).  
 $50 - 8 = 42$  and  $53 - 9 = 44$  were the usual errors together with  $5 - 0 = 5$ . Even when the readings of 53 and 8 were correctly achieved many didn't appreciate that they needed the difference and merely stated the two extremities.
- 1.2.11 Question 11**  
A correct answer of 12 was seen more than it was not in part (a), 10 being the most popular incorrect answer seen. It was rare to see any working shown and so candidates usually earned the full two marks or no marks at all.
- In part (b), 'Hockey' was selected as the team that won the more matches, candidates simply comparing the size of the respective sectors.

### 1.2.12

#### Question 12

Few candidates displayed the given information in a 2-way table. Those who did, usually correctly completed it gaining full marks; although they needed to highlight the required answer to gain full credit.

The working of a great number of candidates, in this question, was very difficult to follow. Few candidates appeared to be working in any systematic way; consequently it was difficult to assess the thinking of candidates. In such cases, it was often only possible to award one or two marks, usually for sight of  $30 - 17 = 13$ , the number of girls, or  $5 - 3 = 2$ , the number of girls going home for lunch. Students should be encouraged to explain, by labelling, their working in questions like this.

### 1.2.13

#### Question 13

Candidates who realised that the sum of the probabilities was 1, usually gained at least one mark, poor arithmetic often accounting for the loss of the final mark

Some candidates worked in percentages and nearly always failed to give the units of their answer of 6.

A great many candidates treated the information given as a linear sequence and attempted to interpolate an answer of 0.12 or 0.13 or 0.14 between 0.09 and 0.18

Some thought they were trying to find the mean and divided by 6.

### 1.2.14

#### Question 14

Students understanding of the demands of QWC (Quality of Written Communication) is still very weak. Whilst calculations were often accurate, few were able to adequately write a concluding statement to their solution.

Theme Park calculations were often thwarted by a misunderstanding of the ticket pricing; many thinking that tickets for each group of 10 cost a total of £6.50 or working out 30 lots of £6.50 and then adding £54 ( $£9 \times$  the remaining 6). The coach hire of £320 was usually correctly identified. In the calculations for the concert trip, the total ticket cost (£270) was usually found, but many candidates were unable to understand the costing of the train travel.

Some candidates mixed the method of travel with the wrong trip. Some credit was still available here for correct methods to find the separate costs.

### 1.2.15 Question 15

This question was answered well by very many candidates, although it was alarming to see some fundamental errors in the plotting of the additional information in part (a). Many candidates also missed out the plot completely possibly because the lack of an answer line meant they went straight on to (b) without being aware of the demands of (a)

In part (b), candidates needed to relate the amount of sunshine with the number of ice creams sold to be able to score the mark, descriptions such as 'the hotter it is the more ice creams are sold', which was a common answer, gained no credit. An alternative approach saying positive correlation was also acceptable but merely saying the relationship was positive was not enough.

In (c), few candidates showed any working, eg line of best fit, and either scored full marks for an answer within the given range or no marks at all. Those that drew a line of best fit often just joined the last point to the origin and were out of tolerance, but still then didn't use it to find an answer.

### 1.2.16 Question 16

Many candidates were confused in their understanding of why the proposed sampling process may not be fit for purpose. The most common unacceptable reason given related to the sporting prowess, or not, of the selected 10 boys. Many candidates thought that a time period was missing, confusing sampling with writing questions for a questionnaire.

In part (b), the most common mistakes were either to omit a time period in their question or offer overlapping response boxes or to draw a tally chart. A number of candidates failed to include response boxes in their question. Students need to be made aware that a question suitable for a questionnaire has two aspects to it; a written question and response boxes. They will not always be told this in the exam question.

### 1.3 GRADE BOUNDARIES

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