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Principal Examiner Feedback

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GCSE

GCSE Mathematics (2MB01/01)

Foundation Non-Calculator Paper (2F)

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1 PRINCIPAL EXAMINER'S REPORT – FOUNDATION PAPER 2

1.1 GENERAL COMMENTS

1.1.1 Many candidates presented their working well, in particular showing all stages in their working. There was, however, a tendency for a significant minority of candidates to make a decision not to attempt questions. Why this was is not clear, but it was related mainly to those questions where candidates had to make some decisions as to how to solve the problem outlined in the question, for example in questions 9, 10, 13 and 15. The advice to centres is to introduce more practice in unstructured questions, problems involving real life contexts, and those which emphasise the functional elements of mathematics. It is these types of questions in which the main weaknesses lie.

1.1.2 Questions in which explanations are required are normally poorly answered. It was pleasing to note that most candidates (in questions 5c & 8c) made an attempt at giving an explanation. Simply stating yes or no will rarely get any marks; this needs to be supported by further reasoning provided by the candidate, relating some to numerical evidence as given in the question. Equally working alone will not get full marks, without a written conclusion or comparison also being provided.

1.1.3 This is a non-calculator paper. Candidates need to be proficient in their use of the 4-rules of calculation. Many candidates were let down by poor arithmetic. Method marks will still be awarded, but poor arithmetic costs valuable accuracy marks in questions.

1.2 REPORT ON INDIVIDUAL QUESTIONS

1.2.1 Question 1

This question was well answered. Many were able to write the number correctly in part (a), and give the correct value of the 6 in part (b). The main errors in part (c) included truncation to 4200 or rounding to the nearest 10.

1.2.2 Question 2

Whilst most candidates realised that one of the children had to go free, too many only accounted for one of the adults in their calculations. Summation was sometimes hampered by poor arithmetic. More marks were gained in part (b) where the marks were given for subtraction of their total from 60. This is an example of a question where candidates need to absorb the information given, choose which information is needed, and ignore the rest. Candidates need to relate the question to the table.

1.2.3 Question 3

This was a question which tested geometrical knowledge. For many all three marks were gained.

1.2.4 Question 4

Part (a) was well answered, but in part (b) the common error was to partially cancel perhaps leaving the answer as $\frac{9}{12}$. In part (c) too many answers consisted of a random number of squares shaded, not always totalling 9. Shading 3 then 5 was common, or just 3, indicating little understanding of the fraction.

1.2.5 Question 5

Part (a) was well answered, the only common error of a few was to draw them as separate rectangles (i.e. adding 4 on each time). In part (b) common approaches included drawing an extension to the diagram, or writing out an extended sequence of numbers. Rarely was derivation of an algebraic rule seen. Unfortunately many candidates concluding incorrectly that 4 was added on each time, thereby using an incorrect sequence with which to work out their answer. Most gave an explanation in part (c), and the marks were awarded on the basis of how detailed their explanation was. The best answers included a conclusion ("no") and a calculation showing the 20^{th} number was 61, or showing it has to be an odd number.

1.2.6 Question 6

It was inevitable that some candidates would confuse factors and multiples, but the majority were able to answer (i) & (ii) correctly. Part (iii) was less well answered with candidates unable to remember what a prime number was, with many of each of the numbers greater than 15 being selected.

1.2.7 Question 7

This question was well answered. In parts (a) & (c) some answers were spoilt with multiple lines and angles being indicated, but this was not common.

1.2.8 Question 8

It is always surprising how few candidates draw a number line to assist them in completing questions on temperature. Those who do are more successful at answering the questions. There were many correct answers in (a), but errors included those who did 8-9, those who miscounted (presumably in their head) and those who counted the wrong way. In part (b) some did the difference with the 10 am temperature, and as in the first part errors of miscounting and counting the wrong way. Most gave an explanation in part (c), and the marks were awarded on the basis of how detailed their explanation was. Many wrong answers were as a result of incorrect calculation. But many who gained the 2 marks did so by a surprising

variety of answers. These included correct calculation (-2°C), use of a number line to demonstrate (in)correct numbers, and comparison of differencing (-7 to -1 is 6° but -1 to 3 is 4° so not halved). Candidates seemed to thrive on the possibility of choosing their own explanation from the data.

1.2.9 Question 9

The star on the question numbers means this is a question in which we are assessing the Quality of Written Communication (QWC). Not only did candidates need to show their working, but without an answer line they also needed to make clear their answer. It was surprising to find how few candidates were unable to produce a sequence of calculations leading to an amount. Very rarely did a candidate consider putting the pieces of wood together, for example buying a 150 cm length for two 65 cm pieces, rather than two 110 cm, thereby saving money. Rather the common approach was to go for one length selected from the table for each piece required, usually five 100 cm lengths and two 150 cm lengths though it was not uncommon to find seven 180 cm lengths being bought. A minority concentrated on the lengths rather than finding prices. This was a question in which poor arithmetic let many candidates down. The space on the page was fully utilised by many, but candidates need to be aware that examiners are more likely to award method marks when they can identify logical working that is well organised on the page. Disorganised work, or a failure to identify important information in their answer will lose them marks.

1.2.10 Question 10

This was another QWC question. Candidates who adopted a practical approach to this question did well. Rather than moving straight to a volume calculation, which was the failing of many candidates, the best way was to consider lining up the cubes inside the box to find how many could be laid along each edge. But not only was the calculation needed, candidates then had to communicate a clear conclusion, which is why this question was flagged as being a QWC question. Many did, either by giving the maximum number of bricks that could be put in the box, giving the dimensions of a box that could fit them all, or suggesting that another layer was needed. Overall quite well answered. Centres need to be aware that practical approaches to Mathematics remain appropriate at KS4.

1.2.11 Question 11

This traditional question was surprisingly not well answered. It was uncommon to find a completely correct table of values. There were many errors in plotting points, and too many who presented a set of points through which a line was not drawn. This was a question in which candidates should have scored highly, but failed to do so.

1.2.12 Question 12

In part (a) candidates adopted two approaches. Some added up the times, and then attempted a subtraction from 08 50, but 08 50 – 100 required some conversion of minutes into hours and minutes, which some found too difficult. The second method was to start with 08 50 and successively subtract each of the four times, which was far better done. Parts (b) and (c) were well answered. In part (d) two lines needed to be drawn. Most realised that a horizontal section was needed, but of these many terminated the line before 13 50. The majority inserted the correct sloping line, with only a minority drawing a line of incorrect gradient, or of positive gradient (disappearing off the top of the graph).

1.2.13 Question 13

Many failed to attempt this question, which is regrettable, since some of the diagram was accessible to all. The first mark was given to anyone who found a simple angle of many: this included some worked out from angles on a straight line or at a point. No reasoning was required: many chose to write on the diagram provided. However, it was important for candidates to identify which angles they were referring to in their working. A second angle could be worked out using properties of parallel lines, which then led to the required angle. There were a number of different routes of solution open to candidates, all of which could attract credit.

1.2.14 Question 14

In part (a) many demonstrated their confusion at algebra by giving as an answer m^5 or even 5^m. Part (b) was better answered, but in part (c) the different rules applied to algebra and numbers again confused, with the additional complication of one letter not having an index. Success rates were therefore low.

1.2.15 Question 15

Another question which candidates preferred not to attempt. The significance of the £3600 was missed by nearly all the candidates who used this as figure for his salary, rather than 4×£3600. Some credit was given for candidates who demonstrated $\frac{2}{5}$ and 30% of the £3600, but in too many cases these calculations were done badly. There were several different routes to the solution, including conversion to fractions, to decimals, or to percentages. This was again a question in which candidates had to order their work logically on the page in order for examiners to understand their order of calculations, and the chosen method of solution. Overall few marks were gained on this question. Centres need to emphasise at all opportunities the need for candidates to set out work logically and clearly.

2. STATISTICS

1.1 MARK RANGES AND AWARD OF GRADE

Unit/Component	Maximum Mark	Mean Mark	Standard Deviation	% Contribution to Award
5MB1F/01	60	30.6	9.2	30%
5MB1H/01	60	28.4	12.5	30%
5MB2F/01	60	28	9.5	30%
5MB2H/01	60	25.9	12	30%

GCSE Mathematics Grade Boundaries 2MB01 – November 2010

	A*	A	B	C	D	E	F	G
UMS (max: 83)				72	60	48	36	24
Paper 5MB1F				39	32	25	19	13
UMS (max: 120)	108	96	84	72	60	54		
Paper 5MB1H	50	39	28	17	12	9		

	A*	A	B	C	D	E	F	G
UMS (max: 83)				72	60	48	36	24
Paper 5MB2F				39	32	26	20	14
UMS (max: 120)	108	96	84	72	60	54		
Paper 5MB2H	47	37	27	17	12	9		

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