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Examiners' Report/ Principal Examiner Feedback

January 2013

International GCSE Mathematics (4MA0) Paper 1F

Level 1 / Level 2 Certificate in Mathematics (KMA0) Paper 1F

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General Introduction

January 2013 saw a significant increase in numbers, in comparison to any other previous winter session, both at foundation and higher level. At foundation level, numbers rose from a figure of around 400 to nearly 3500. At higher level, numbers rose from around 2000 to nearly 4500. Much of this expansion was fuelled by increasing numbers entering the Edexcel Certificate.

Introduction to Paper 1F

In general, candidates found the early part of this paper accessible. Some later questions required attention to detail, typically question 15 (transformations) and question 17 (totals from a frequency table). Questions that required basic numerical manipulation were well answered, whereas those requiring algebraic processes or remembering geometric terms and/or definitions produced a much weaker response.

Report on Individual Questions

Question 1

Spelling mistakes were overlooked in part (b) as long as the meaning was clear. The most challenging component was probably part (d) with many candidates opting for 7612 rather than 5895.

Question 2

All components of this question scored well. Sometimes the fraction in part Q2(c)(ii) was not fully simplified down to 2/25 or candidates went beyond this and put 1/12.5 as a final answer and lost their mark.

Question 3

Q3(a) demonstrated misunderstanding of place values in decimals and also that candidates did not always distinguish between the spellings of ‘hundred’ and ‘hundredth’. All other parts performed better with the exception of Q3(d) where a lack of attention to detail meant that candidates ‘lost’ numbers from the original list or mis-copied them.

Question 4

Although both parts required the application of BIDMAS the success rate was much lower in Q4(ii). Candidates chose to leave the boxes empty or duplicate numbers (eg $2 – 2 \div 3$) to try to obtain the correct result.

Question 5

Despite the intricacies of the pattern, Q5(a) scored well. In the remaining two parts of the question responses were generally good. Some put 166 as their answer to Q5(c) (from 3 x 55 + 1). In Q5(c) 1 mark was gained from an embedded correct answer of 55 if 3 x 18 + 1 was seen earlier.

Question 6

In Q6(a) many tried to spell “quadrilateral”, and ‘parallelogram’ was also a common response. Trapezium was identified by only a small number of candidates. On Q6(b) candidates misinterpreted the term ‘congruent’ for ‘similar’ and chose shapes B and G. Q6(c) was generally well done, though some candidates lost a mark by incorrect labelling, (ie that an ‘x’ was placed at the intersection of 3 or more lines). In Q6(e) candidates offered an answer around 18 (from 5 x 3.6). The mark scheme took into account, and gave credit for, the attempts at square counting.

Question 7

In Q7(a)(ii) the phrase ‘opposite angle’ or ‘vertically opposite’ was required to gain the mark. Answers such as ‘on the other side of the X’ gained no credit. In Q7(b)(ii) “angles at a point/angles in a circle/angles in a full turn” together with a mention or a calculation involving 360 gained the mark. Purely numerical explanations alone, involving 360 (typically 45 + 315 = 360) were not rewarded.

Question 8

Writing all 10 numbers in a logical order (e.g. ascending order) anywhere on the page gained credit as an attempt to work out the median. The last part of the question was designed to test the fact that the median would stay the same because the smallest number (15) would be replaced by a number taking up the same position in the sequence. Candidates thought it would stay the same as there would still be 10 numbers.

Question 9

The negative answer in Q9(a) did not put too many candidates off. In Q9(b) candidates chose to write 24 (from 6 x 4) rather than 1296. In Q9(d) candidates chose to take the square root rather than the cube root as requested.

Question 10

Due to the target grades and the number of marks allocated, numerical approaches were allowed in Q10(a). However in Q10(b) a method mark had to be gained by an algebraic method (usually multiplying out the brackets correctly) before full marks could be awarded for a correct answer.

Question 11

Most parts of this question proved accessible. Some candidates ran into problems in Q11(b) calculating the time interval between 20.30 and 8.15 but most picked up some marks by getting the minutes (45) correct but miscounted the hours.

Question 12

Weaker candidates offered 78 (from 32 + 46) as an answer for Q12(a) and would then gather the terms incorrectly in Q12(b)(iii). Responses on the answer line are always examined first. Hence if a correct answer is seen in the body of the script (6t – 12) for Q12(c) and then further 'simplified' to – 6t, the mark is withheld.

Question 13

Some candidates put the correct decimal in the table and placed an entirely different value in the answer line. This gained 1 of the 2 marks available. Misreads were not given any credit in Q13(b).

Question 14

Weaker candidates in Q14(a) failed to convert a fraction (45/625) to a percentage or attempted to find 45% of 625. In Q14(b) 8% of 45 was often found (3.6) and left as a final answer rather than an increase of 8%. A regular incorrect answer was £53 (from 45 + 8). In Q14(c) some candidates started the process by finding the difference (£15) before either stopping or going on to make the wrong move. Some credit was gained in Q14(d) by dividing 80 by 1.3 (or better), 1.2 or dividing 18 by 80. Candidates should always examine their answer to check if the size is reasonable. Answers of 0.225 km/h and 1440 km/h both fail this test in the context of a cyclist.

Question 15

Both parts of this question proved challenging to weaker students. In Q15(a) a "T" shape had to have the correct orientation to gain any credit. Stronger candidates were able to reach 2 marks from 3 with the correct size but it was often in the wrong position on the grid.

Question 16

Equations with a 3 mark tariff require starting with an algebraic process in order for the accuracy mark(s) to be awarded. Difficult as it was to 'spot' the correct answer by trial and error, if successful, this method gained no credit. The minimum requirement was to reach a correct equation involving one unknown typically $2y = 4$ or $4x = – 6$.

Question 17

Determining the correct midpoints of the intervals presented an extra challenge in Q17(b), however as the topic was so commonly tested, many candidates picked up some or full marks. If the mean average was calculated from 1040 this was overlooked and full marks were awarded. A common mistake was taking the end intervals rather than the midpoints. A consistent point within the interval, including the end points, was also rewarded with 1 mark.

Question 18

This question proved the most challenging on the paper with many candidates unsure of what was expected. Those who attempted the question often chose to subtract 2 from either – 2 or 5 but not both. Responses which lost all or some marks were those that listed integer solutions in Q18(i) or incorrect shading of circles in Q18(ii).

Question 19

This trigonometry question was found challenging by candidates which was potentially due to the positioning of the angle in the top corner and/or not labelling the required side with a lower case letter. Some candidates chose sine rather than cosine as a result and gained no credit for working out *AB* rather than *BC*. The upper bound in Q19(ii) scored less well than the lower bound in Q19(i) with common answers of 38.4 for the latter.

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