Examiners' Report/
Principal Examiner Feedback

June 2011

International GCSE
Mathematics A (4MA0) Paper 2F

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June 2011
Publications Code UG028400

International GCSE Mathematics A
Specification 4MA0
Paper 2F

General Introduction to 4MA0

There was an entry of just under 31,400 candidates, 1,800 more than a year ago. This comprised 19,800 from the UK and 11,600 from overseas. The Foundation tier entry fell by 16% but, in terms of numbers of candidates, this was more than compensated for by an 8% increase in the Higher tier entry.

All papers proved to be accessible, giving appropriately entered candidates the opportunity to demonstrate their knowledge and understanding.

Paper 2F

Introduction

Paper 2F provided sufficient opportunities for candidates to demonstrate their knowledge and understanding on a range of regularly tested topics, especially early on in the paper.
Generally the presentation of written work was good, but in a significant number of cases poor handwriting, multiple starts on questions and a random structure to the layout of working cost candidates marks.
An appreciation of a reasonable size for an answer was occasionally found wanting in questions involving area (Q5c), distance and speed (Q13) and price (Q19).

Report on individual questions

Question 1

For the first question most candidates recognised the term “right (angle)” for part (a)(i) and the majority gave “acute (angle)” for part (a)(ii). Few could remember the correct response of “reflex (angle)” in part (a)(iii), often mixing it up with obtuse angle. “90° angle” was not accepted in part (a)(i). In a small minority of cases candidates measured all three angles. Reasonable misspellings were condoned.

Question 2

All components of this question were well answered. In a minority of cases candidates offered the 9 goals scored in September as the final answer in part (b). Very occasionally 10 footballs were drawn in the pictogram in part (c), having paid no attention to the key.

Question 3

A number of responses had an arrow drawn 4 marks to the right of 3.6 on the ruler, instead of 2 marks in part (b)(i). All other components scored very well with only the weakest candidates failing to gain credit.

Question 4

From the numbers to choose from in the box a minority failed to recognise 8 as a cube number. Various odd numbers were offered as primes, but generally this question was a good source of many marks.

Question 5

A disappointing number of candidates could not measure the line PQ to the required degree of accuracy (5.2 to 5.6 centimetres inclusive) and one can only surmise they did not have the necessary measuring instruments to hand.

Correct coordinates (9, 7) were obtained by the majority with only the occasional reversal of digits.

Part (c) was not well answered. A large number of candidates possibly linked this back to part (a) and used their value of PQ (or SR) and multiplied this by the base. Hence 5.4×6 (=32.4) was a frequent answer. A significant number of others calculated the perimeter. Counting squares was an acceptable method but not widely used. Many candidates ignored the request to write down the units for their area or gave a linear measure (usually centimetres).

Question 6

In part (a) most candidates recognised one of the two road signs with one line of symmetry, but both had to be stated correctly to gain the mark. Many thought sign A had only one line of symmetry. Full marks were usually secured in part (b).

Question 7

Those who lost the mark in part (a) did so by getting only one number out of sequence. Part (b) was well answered.

Question 8

Readings from the graph were usually accurate though some candidates offered 30.8 as a solution to part (a)(ii). Most candidates used the word formula effectively in part (b) to reach the correct answer.

Question 9

Oslo was usually identified correctly as the city with the coldest midnight temperature. The recorded temperature of – 8 was also accepted as an answer.
In part (b) – 6 was as common a response as (+) 6 but gained only 1 mark of the 2 available. Many failed to manipulate – 8 and – 2 correctly and ended up with an answer of 10 or – 10.

Question 10

This was a well attempted question with the majority picking up full marks. An easy method mark was available by simply replacing "of " with a multiplication symbol to give $\frac{3}{8}\times 120$.

Question 11

Correct answers were obtained by the majority. Problems arose when some candidates tried to incorporate 360° or percentages.

Question 12

Candidates coped well with both equations in part (a). This year International GCSE normal procedures in dealing with algebraic equations were relaxed to allow correct answers with no working to gain full credit at foundation level on equations such as this, that required a process of two steps or less.

In part (b) 4a was a common response in part (b)(i) and likewise q^4 in part (b)(iii).

In part (c) a surprising number of responses claimed that 2*w* was 26 when *w* = 6 and proceeded on to 36 – 26 (=10) or 12 – 26 (= – 14).

Question 13

The key to success in part (a) was to get the units for money the same, either by converting $48 to cents or 32 cents to dollars. Only around half the candidates did this. A prompt of 100 cents = $1 might have made a difference and provided the necessary hint.

In part (b) relatively few gave a fully correct method. Many divided 72 by 1.2 or 1.3 to gain only 1 mark. Others divided 72 by 80 and failed to recognise that this was a speed in kilometres per minute. Having the units of km/h on the answer line failed to make it obvious that 0.9 km/h was a relatively slow speed to be travelling.

Question 14

Overall the responses for this question were poor, either because many candidates had little idea what a bisector was or (judging by the number of freehand arcs seen) did not have the necessary equipment to carry out the construction required. A variety of unrelated shapes, usually involving triangles and circles appeared above or below the line PQ. As on the higher paper some responses had one pair of intersecting arcs above PQ and then a line drawn down using a protractor or set square. This gained no marks. In some cases candidates produced two arcs at an equal distance from P and Q, intersecting the line PQ. The required intersecting arcs were then constructed from these two points and this was accepted as a valid method.

Question 15

In part (a) most candidates fully understood the method required to gain correct answers. By dividing 200 or 230 by 6 truncation errors often crept in and by subsequently multiplying by 15 these errors became significant and produced inaccurate final answers, (typically around 574.95 and 499.95 instead of 575 and 500). Some responses displayed long-winded algorithms of doubling the amounts (12 people), halving the amounts (3 people) and then adding.

In part (b) many recognised the need to add the weight of all the ingredients but were unsure what to do with the resulting 800 grams. Weaker candidates concentrated on doing some arithmetic on 160 grams (soft brown sugar), usually dividing by 6 (because of the 6 persons).

Question 16

All components of this question were answered poorly. Bearings seems to be particularly difficult for foundation candidates to deal with.

In part (a) many candidates either failed to measure the line from A to B correctly or did not multiply by 5 to produce the actual distance between these points.

Both parts to this question that involved bearings did not score well, particularly part (c).

Candidates in part (d) did not perform well and full marks were awarded only in a small minority of cases. Despite the question clearly stating the treasure was buried on the island many placed their X in the sea.

Question 17

In part (a) the prompt of the add sign in the top left hand corner and giving 2 + 3 = 5 in the table resulted in most completing the table correctly. A number of candidates did not see the relationship between parts (a) and (b). Some failed to count the number of 7s in their table and stated that P(7) = $\frac{1}{7}$ or $\frac{3}{6}$ (i.e three 7s out of 6 counters). In extreme cases some candidates maintained the answer was zero or impossible as there were no counters in either bag with a 7 on them.

Question 18

The different scales on the x and y axes was an obvious hurdle to many in drawing a line with a gradient of 2. Many recognised the y intercept was (0, –1) but produced lines with gradients of $\frac{1}{2}$ or 4. Many responses were lines that were pitifully too short. Although no guidance was given in the question, lines barely 5 centimetres or less are clearly inadequate on a grid that stretches 12 centimetres from left to right. The mark scheme required lines to stretch from x values from –2 to +2 for full marks but some leniency was given here if shorter lines were otherwise correct.

It was disappointing to see how few responses involved drawing up a table of y values before plotting points.

Question 19

Stronger candidates coped well here and gained full marks. It was disappointing to see so many responses stop short and give a final answer of 96 (15% of 640).

Question 20

For weaker candidates the scenario of the experiment of tossing coins a certain number of times caused confusion. Some assumed when John threw the coin once more it would automatically result in 31 tails from 121 throws. If 30 tails had not been mentioned beforehand all marks were lost in part (a).
In part (b), despite a statement declaring it to be the same coin, some candidates thought Carly was throwing a new coin, free from bias, and therefore would result in 100 tails from 200 throws. Others took the 90 heads from part (a) and subtracted it from 200 to produce 110 as an answer.

Question 21

Stronger candidates viewed a familiar trigonometry question, such as this, as straightforward and an easy source of 3 marks. The full decimal display of 6.222914... could be truncated to 6.22 without the accuracy mark being lost. Many candidates either scored 3 marks or zero here.

Question 22

Candidates at foundation level obviously found this question more of a challenge than their counterparts on the higher paper, however there was a very pleasing level of success. Most who fell short usually gained 1 mark by adding the given 5 numbers to produce 20. Weaker candidates then went on to divide this total by 5 to produce 4 as an answer.

Question 23

Candidates unfamiliar with the terminology of lower and upper bounds tended to state numeric values with no connected logic to the question. Common wrong answers were 136 and 130 in part (i) and 137.4 and 138 in part (ii).

Question 24

Factor trees were more common than division ladders. If done correctly, (i.e. producing factors that multiplied to 126) they could score 2 marks from the available 3. The inclusion of 1s was condoned at this stage but penalised by the loss of the accuracy mark if included in the final answer. The final accuracy mark was also withheld if multiplication symbols ($\times$ or $\cdot$) were omitted. Weaker candidates tended to either produce the factors of 126 or lists of numeric pairs multiplying to 126.

Question 25

The inequality question set here was easier than the one set on the higher paper and full marks were awarded for a correct answer with no working. Considering its position as the penultimate question on the paper, this was a well answered question with a high level of success. Those who treated the inequality as an equation gained no marks unless the final answer was in correct form (eg $x \geq 3$).

Question 26

The fairly obvious step of adding the two equations together to eliminate y and produce $7x = 28$ was not so obvious to many. Many candidates went through the lengthy process (often unsuccessfully) of trying to eliminate x or a torturous process of trial and error, (which gained no credit even if the correct answers were found). Some lost the final accuracy mark by proceeding from $7x = 28$ through to $x = 4$ but then calculating y incorrectly. In rare cases candidates stated $y = 0$ presumably because it didn't appear in $7x = 28$.

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