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Principal Examiner Feedback

Summer 2014

Pearson Edexcel GCSE
In Mathematics A (1MA0)
Foundation (Non-Calculator) Paper 1F

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GCSE Mathematics 1MA0
Principal Examiner Feedback – Foundation Paper 1

Introduction

The paper was accessible to all candidates, with all questions attempted by a good proportion of candidates.

The standard of basic arithmetic seen was often poor and marks were lost when candidates could not perform simple calculations, even though they understood the mathematical concepts being examined in the questions. Their comprehension of mathematics often out stripped their numerical ability.

It was noticeable that more candidates appeared to be showing their working out. This often benefited them as they faltered on the actual calculations.

The standard of algebraic manipulation was often below the required standard of GCSE.

Report on individual questions

Question 1

This was an accessible question for most candidates. It allowed candidates a positive start to the paper. Part (a) and (b) were usually correctly answered. However in part (c), the most successful strategy seen was to write all the numbers out to 3 decimal places and then compare. A common incorrect answer was to place 0.63 before 0.603 or misplace 0.6.

Question 2

This question was also well answered. The majority of candidates were able to give the 3 correct answers.

Question 3

Candidates were able to access this question. The concept of addition and difference were attempted by the majority of candidates. All too often full marks were missed because of incorrect arithmetic. Most candidates preferred to add the two sets of three numbers and then subtract. Most errors were in the additions attempted.

Question 4

Part (a) was answered usually correct.

Part (b) was well answered, very few blank or incorrect responses were seen.

In Part (c), whilst only a minimal reason was required, many lacked clarity. Common incorrect responses seen were “it goes up in 4s” “not in the four times table” “it’s not in the pattern”. Correct answers usually referred to the sequence consisting of odd numbers or the fact that 372 was even, or both points and some candidates correctly used the nth term. However, a few candidates did confuse the terms odd and even.

Question 5

Part (a) was well answered, very few blank or incorrect responses were seen.

Part (b) was a challenging question for many candidates. The use of negative temperatures was ignored by some candidates who chose to work with absolute values. Others attempted to add the numbers given, but arrived at a variety of answers. The most able showed a full method and this was required for the method mark. The accuracy mark was only awarded on a minority of occasions. A common error was to see $7 \div 7 = 0$. It was also apparent in this question that candidates attempted to sum the numbers in their head. Unfortunately, when they got the wrong answer no marks could be awarded as there was no evidence where their total had come from.

Question 6

In Part (a), correct time was usually given.

In Part (b), a common incorrect answer of 11 was often seen. Showing candidates lack the comprehension to understand this question.
Part (c) was often more successful than part (b) with the correct time interval usually stated without any visible working out. The most common incorrect answer was 63 where candidates saw the hour difference but added 3 instead of subtracting it.

Question 7

Part (a) was well answered, with some answers seen on the scales. Many candidates found a quarter of 48 and $48 \div 2 \div 2$ was often seen as working out.

Part (b) was more variable with some candidates able to read the scale, some able to divide by 3 and others able to do both. Marks were lost through poor arithmetic again in this question or because the scale was read as 650. Although candidates realised they needed to divide by 3 many tried to half and half again, obviously this did not arrive at the correct answer.

Question 8

Part (a) was well answered with the occasional incorrect answer of ‘hexagon’ seen.

Part (b) was well answered. The majority of candidates were able to identify a pair of parallel lines. Part (c) was well answered. Most candidates could recognise an acute angle.
In part (d) a few fully correct answers were seen, with the majority of candidates scoring part marks on this question from either 10 or the independent cm^2. The perimeter was often confused with area when candidates counted the diagonals as 1cm. to give an answer. A significant number of candidates attempted to extend the shape, usually leading to an incorrect answer, rather than counting the squares.

Question 9

The majority of candidates scored 3 marks as all was correct apart from the missing label on the vertical axis. It was most common to see a bar chart, less frequent was a frequency polygon. Uneven bar widths were seen occasionally and heights were generally correct.
A key was usually given and the months usually written out in full or written so as to be easily distinguishable. Where some fell down was that linear scale was incorrect or written within squares.
Labelling the *y* axis was problematic for many and incorrect labels used included “temperature” or “frequency” or occasionally “y”.

Question 10

In part (a), the approximate rule was generally applied correctly to give an answer of 70. However, the exact rule although applied correctly rarely gave the correct answer due to candidates’ inability to multiply 20 by 1.8. This led to many different answers of which 21.6 appeared to be the most common. They were able, however, to gain 3 marks out of 4 by a correct difference being given to their subtraction as long as all the working out could be followed.

Part (b) was generally answered well, though it appeared that some used a simple form of 'trial and improvement’ to arrive at their answer rather than a using inverse operations. Those who used the reverse operations sometimes incorrectly divided 110 by 2 first then subtracted 30 to give 25. A very small percentage of candidates used the exact rule and were able to score some marks from the special case consideration.

Question 11

In part (a), most could count correctly and then give the answer as a fraction. For those that went on to simplify this fraction, many did so correctly. Several just gave $\frac{14}{30}$ as the final answer.The most common error was to see an answer of $\frac{16}{30}$ where candidates had counted the unshaded squares instead of the shaded squares. Some did try to "simplify" $\frac{7}{15}$ further and so scored only one mark. A sizeable minority gave the answer $\frac{14}{16}$.

In part (b), the correct answer of 2 was often seen and the most popular incorrect answer was 1.

Part (c) was generally well done but it is disappointing to see that a significant number of candidates did not even attempt this question. Quite a large percentage of candidates got full marks for this question.
Of those who didn't, common mistakes were splitting the shape in half and trying to shade sufficient squares to make one side a rotation of the other or shading squares correctly in rows 2 and 4 but leaving the top and bottom rows untouched.

Question 12

Part (a) was well answered with most candidates writing 3*ac* occasionally *ac*3 was seen.
In part (b), p^3 or p3 were the common answers unsurprisingly seen. The size of the 3 was rarely debateable and the candidates' intention clearly communicated.
Part (c) was not well answered. Many candidates scored 1 mark but –*y* was far too often seen as the second part. Occasionally 8x7y was written as a product.

Question 13

Part (a) was very well answered with the use of the word 'and' condoned.

In part (b), a high percentage of candidates gained full marks on this question. Those who missed out on full marks often gained one mark for one correct dimension. The rectangle was drawn in different orientations but this was acceptable.

In part (c), the full correct answer was frequently seen. However, actual measurements recorded on the given diagram were rare, as was the comment that it was a size 1 advert. Most went straight to £6.50 and multiplied by two giving the correct answer. The most common incorrect answer was £27.00, where the candidates has been inaccurate in their measuring, or had rounded the length to 45mm, evidence of the mistake was rarely seen.

Part (d) was a very well answered question on the whole – most candidates either got the question completely right or started off correctly by attempting to multiply £13.50 by 8, but then went wrong in their calculation.
Common calculation errors were: multiplying 8 by £13 but forgetting to multiply 8 by 50p as well, using a "doubling" method but going one step two far

(13.50 x 2 = 27 x 2 = 54 x 2 = 108 x 2 = 216), using a basic addition or subtraction method but with either using too few or too many 13.50's.
A few candidates misread the question and multiplied the 8 weeks by an incorrect account.

Some students gave excellent conclusions as to why £100 was not enough, but quite a few just did the calculation, arrived at £108, and finished there. As this was not a QWC question this was not a problem, but candidates should always be encouraged to write some form of short conclusion to these types of questions.

Question 14

In part (a), there was much uncertainty whether to divide 3 by 5 or the other way round.

Many chose to do 5÷3 as this was possibly thought to be easier. However, if a conversion into pence was made the answer of 60p was much easier to calculate. Poor arithmetic was seen in this question and also money notation was weak eg 0.60(p) and 06(p). There was a lack of awareness of the reasonableness of the answer as many incorrect answers if checked were obviously wrong.

In part (b), many candidates wrote down a first step but then found 100÷ 80 too difficult a calculation for many; 1.20, 1.24 were common wrong answers. 100 ÷5 as a starting approach was commonly followed by a second step of 20÷80 but then this proved too difficult to execute or became 80÷20=4 and £4 was often given as the final answer. Again a quick check would show this was obviously incorrect.

0.25p was also given as the final answer, thus showing a lack of understanding of notation. In this question correct notation was expected for the final accuracy mark.

Question 15

Candidates were often able to find the volume of one of the cuboids. They were able to see the need to divide the two volumes but the number of zeros present in the calculations was variable. 2 or 2000 were popular incorrect answers. Again the level of arithmetic restricted scoring on this question.
Another popular method was to find out how many small boxes could be placed inside the larger box but even with these three numbers wrong answers were still given. Some candidates could not successfully multiply 4, 5 and 10 whilst others chose to add them.

Question 16

Only a few fully correct answers were seen because reasons, containing all the key elements, were rare. When reasons were given they were seldom all given. If attempted, angles in a triangle add up to 180° and angles on a straight line add up to 180° were generally correct, however 'isosceles triangle equal to 25 since 2 parallel sides' was the most common quote for the rarely mentioned isosceles triangle.
A common method used was to start with the large triangle to give 25+70=95 then 180-95=85 unfortunately they then said x=85 so no marks could be awarded.

It was rare to see "angle ADB=25" written down but 25 was seen labelled in the diagram and this received 1 mark.

Question 17

This question was not well answered and was not even attempted by a good number of candidates. Many who did attempt this question had more than 3 sectors so could not gain any marks others just used the given values directly as degrees. Some candidates did manage to draw one angle correct but it was doubtful how they did this without any evidence of working out. Freehand lines were also in evidence and candidates need to be reminded that this can often lose marks as part of a freehand line could fall outside the accepted tolerance.
If all three angles were drawn they were usually correctly labelled, however, a small number of candidates showed all their working, drew correct angles and then placed the labels in the wrong sectors.

Question 18

In part (a), many candidates ignored the fact that "5" had to be negative whilst others used 3 + −5 instead of 3 x −5. −15 + 8 was frequently seen but then it was either not completed or given as ± 23. Occasionally $-15x + 8y$ was given as the final answer or even $7xy$.

In part (b)(i) was not well answered and common wrong answers were: p = 10, p = 10p, p+10.

In (ii) a follow through was permitted only if (i) was algebraic and many candidates scored one mark this way. A common error was to give 10p correctly in (i) but wrongly give 3p in part (ii)

Question 19

Candidates appear to find arithmetic with fractions difficult, all too often $\frac{2}{2}$ or $\frac{2}{2}$=1 were given as the final answer. Even when candidates were able to give 15 as the lowest common multiple of 5 and 3 they could not go on to find the correctly associated numerators.
Some candidates used the grid method to find the answer, this worked for some candidates but others could fill in the boxes and then did not provide a final answer.

Question 20

Candidates showed a variety of approaches to this question. Some used a two way table and filled in the gaps. Calculations were rarely shown in this case and sometimes simple mistakes were seen. The answer must be identified within the table to gain full marks.
Most candidates, at this level, did not use a two way table, they used a string of calculations using the numbers in the question. Some of these calculations were not sensible for example adding 21 and 18 others just added all the numbers given.

More successfully candidates often scored a mark form either finding 29 males or for realising 8-6=2 is the number of females who play squash. A second step was less often seen, their first answer needed to be used to find a second value which could go in the table, often this step was incomplete. Some candidates did manage to do 29-9 or 29-6 but not always 29-6-9.
Whilst 14 and 15 may have been given by candidates these were not always for the correct classification and when a lot of different calculations are possible centres should encourage candidates to clearly show what they are working out.

Question 21

Most candidates attempted this question, with very few leaving it completely blank, but the inability of candidates to deal correctly with fractions and percentages of amounts of money was highlighted quite starkly here.
Part marks were often scored. Most candidates could find one of the prices, however, a lot of mistakes were made. For example $\frac{1}{3}$ off is not the same as 30% off and too many candidates found 60% but then did not subtract this from the full price even though they had correctly found $\frac{1}{3}$ off. Many wrote $\frac{1}{3}$ of 24 was 6, possibly coming from 24÷2÷2. Some found 60% of either £12 or £24. Many successfully found 10% and multiplied by 6, or added 10% to 50%, but some found 50% then found 10% of their “50%”, technically calculating either 55% or 45%.

Even with one correct calculation achieved far too many candidates went on to add the discounts together, or a mixture of discounts and discounted tickets, or only added one child, or even adding two adults and one child.
Part marks were the modal score for this question.

Question 22

This question was attempted by most candidates. However, some wrote questions which were not related to the required topic. Candidates must consider books bought not read or preferred. Centres should ensure that candidates give exhaustive options, often the zero option was missing and always give a time frame. There are still some issues with overlapping options but it is pleasing to see that, at this level, hardly any candidates used inequalities, which are not acceptable in questionnaires.

Question 23

In part (a), there was only one mark for this question and so both terms were required. This happened sometimes but often $2m^2$ was correct and 6m was incorrectly given as 6 or $3m$ or $5m$. Occasionally $2m^2+6m=8m$ or $8m^2$ or $8m^3$ was seen, there is no 'ISW' on algebra questions and so these answers did not score the mark.

Part (b) was not well answered. It appeared to be beyond most candidates. Occasionally $3xy$ was identified as a factor but the other factor was rarely seen.

Question 24

There were quite a few fully correct answers given. However, a significant number found the perimeter of the shape instead of the area. The concept of finding an area for a 'pig' did not seem to be an issue but finding the area of a simple compound shape was. Many failed to work out the hidden dimensions correctly, showing no working for any answer obtained. Those who found areas often included an overlap section, usually 16×6 with 7×10 or just considered 16×10 failing to subtract 4×9. The most popular correct area seen was $7\times10= 70$. Some arithmetic errors were seen when calculating areas. Many were able to gain the first method mark but then far too many scored zero on second method mark.

The need to divide by 36 was understood by many but it was a challenge to actually carry out a suitable calculation. The most successful way was to repeatedly add 36 and get to 108 and even 144 then realising that this meant that the correct area of 124 could hold 3 pigs.

Question 25

This was an accessible question for many candidates. A good proportion scored 1 mark by rotating the shape through 180° but not always about the correct centre. Many correct answers were seen.
Very few candidates changed the size of the shape but some did draw a reflection.

Question 26

This is quite a standard question but many pupils just left it blank. Some stated they were running out of time and so this may have accounted for why many were blank.

When candidates did attempt the questions the standard of arithmetic was appalling. Some found the difference between the two prices to be 60p, how could this be when one price ends in a 4 and the other in an 8? Others discussed the size of the bottle and whether it would fit in the fridge without doing any calculations at all, others just wrote down a size. As a QWC question both working and a statement was required.

A comparison of equivalent numbers of pints was expected to justify the answer but often 1.18×4 and 1.74×6 was compared or 8 pints and 12 pints by doubling,

the candidates stated this was what they were doing and so showed a total lack of understanding of the required strategy.

There was poor evaluation with £1.18÷4=29.2 often seen and 1.74÷6=1.74÷2÷2÷2 was frequently stated. There was an over reliance of halving by many candidates. A simple but effective successful strategy was to find the price of 2 pints from the 4 pint bottle and multiply this by 3 to give a 6 pint comparison, £1.77 was often correctly given.

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