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Examiners' Report/
Principal Examiner Feedback

Summer 2015

Pearson Edexcel International GCSE
Mathematics A (4MA0)
Paper 2F

Pearson Edexcel Certificate
Mathematics A (KMA0)
Paper 2F

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Grade Boundaries

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Introduction to paper 2F
Overall the paper was quite well answered at the beginning, with students finding the more challenging topics tested at the end difficult to gain marks on. Some students showed adequate working, but there are a large number who showed insufficient and this may have lost them marks. There was evidence that some students are confused with the language of Mathematics and got concepts such as factors and multiples and the different measures of central tendency confused.

Report on individual questions

Question 1
This question was generally well answered, although very few students knew all the factors of 28 in part (c) and some got mixed up with factors and multiples.

Question 2
(a) The majority of students could write 5467 in words. It must be stressed that each of the words must be written as words – so 5000 cannot be '5 thousand'; it must be 'five thousand'.
(b) This question was poorly done, many students just finding the difference between two of the numbers from the diagram. It was also a question where many students misread the numbers; we allowed method marks if there appeared to be a definite misread.

Question 3
The majority of students know the units to be used. However, there was a mixture of incorrect answers including imperial units, centimetres instead of metres and kilograms instead of grams.

Question 4
The vast majority of students were able to correctly identify the 3-D shapes and give the number of edges and vertices as required. Some students clearly got mixed up with edges, vertices and faces.

Question 5
Most students were able to continue the number sequence but students who had clearly been able to continue it accurately, were then unable to describe what they had done; unfortunately some students chose to continue the left hand end of the sequence and get the answers 35 and 38. A range of statements including adding, dividing and subtracting two were given when all that was needed was 'take away 3'. Descriptions such as 'I calculated the jump between the numbers' were not sufficient.

Question 6
The majority of students were able to read information from the pictogram and answer the questions correctly. The ratio question at the end clearly caused problems to quite a lot of students. Some clearly did not understand what a ratio was, just giving a value; often 30. Some students gave their answer as a fraction and it must be stressed that when a ratio is requested there will be no marks for a fraction. Those that knew how to write a ratio, were often unable to simplify it correctly. A few students wrote the ratio the wrong way round; 2:3 instead of 3:2 and were awarded a method mark as long as the ratio was fully simplified.

Question 7

(a) The majority of students know how to write a decimal as a percentage, but we saw a fair number of 8% rather than 80%

(b) Writing 0.023 as a fraction clearly caused a number of students a problem, some not appearing to know what a fraction is and others thinking that 23 should be written as a fraction over 100.

(c) Students found this rounding question very difficult. Many moved the position of the decimal point to give 563.82 which actually meant they multiplied by 100 rather than rounding to 2 decimal places.

(d) This calculator question involved a square root and a square and candidates often gave us the answer 6.62872.... This came from continuing the square root over the whole of the calculation. We often test the use of the root around just part of the sum and it must be stressed to students to ensure that the calculation that comes up on their calculator screen is the same as the one that appears in the question. If students had shown us a correct part of the answer, such as 6.5 or 1.69 we would have awarded a method mark.

(e) Finding $\frac{3}{8}$ of 56.8 was challenging for many students; many wrong answers came from dividing 56.8 by $\frac{3}{8}$.

Question 8

Very few candidates gained full marks on this question. Many students failed to realise it was a question about perimeter and often found the area and then took away 10.6 (a length) from this; these students gained no marks. Some students added the two figures in the diagram, failing to realise that they needed 2 lengths and 2 widths in order to 'put fencing completely around the edge of the vegetable garden'.

Question 9

(a) This was generally well done, with a few students making the usual mistake of putting e^4 rather than 4e.

(b) Most students were able to simplify the algebraic product correctly; it must be stressed to students that no multiplication signs should appear in such a product.

(c) Quite a lot of students were able to gain full marks for this question but some thought that the answer should be $11m - 3k$ rather than $11m + 3k$; this appears to be because they see a minus sign in the expression and assume there must be one in the simplified expression. Those students that went on to incorrectly 'simplify' $11m + 3k$ to $14mk$ or similar gained just one method mark for seeing $11m$ or $3k$ and it needs to be stressed to students that this is incorrect algebra.

Question 10

(a) The majority of students were able to find the square root of 100, with only a minority giving 50 as the answer.

(b) It was surprising how many students clearly did not know what a square number and a cube number are. If we clearly saw a square number and a cube number identified in the working space, even without a correct answer the student was able to gain a method mark for each; this stresses the need to show working. Some students gave the answers as, for example 64 and 27 and some gave 8^2 and 3^3; we allowed both of these styles for full marks.

Question 11

(a) A minority gained full marks on this question and given that students should have had a calculator and been able to change the fractions to decimals easily this was surprising. The most common incorrect answer was $\frac{2}{3}, \frac{3}{4}, \frac{5}{8}, \frac{7}{16}$ where the student put the fractions in order of the size of the numerator. A method mark was available for seeing at least two of the fractions written as decimals or written with a common denominator of 48 or a multiple of 48; the latter was seldom seen.

 (b) Very few students were able to correctly write the required fraction, many appearing to think it was something to do with being a percentage and some fractions given were 'top heavy'.

Question 12

Few students gained full marks for this question. The 'change' caused a lot of problems and students often did not appear to realise that this meant George had not spent £10. We allowed students to gain some method marks for this, even though they did not understand the concept of 'change'.

Question 13

(a) Many students were able to state the correct scale factor but there were many random numbers given, including 12 and 16 and products of the numbers given in the diagram.
(b) The majority of students at this level were unable to reflect the shape correctly in the line $y = -x$. Many reflected in the x-axis or the y-axis. A few drew the line $y = -x$ for which they gained a method mark.
(c) It should be noted that when a single transformation is asked for, then if a student tells us of two transformations, e.g. rotation and then a move down they will gain no marks. Note that in this question, there was a mark for the word 'rotation'; we allowed rotational and rotate but not turn, one mark for 90° clockwise or 270° anti-clockwise and one mark for the correct centre (0, −1). Few students scored 3 marks but many scored one, generally for the word 'rotation'.

Question 14

(a) Please note that for an event that is impossible, we accept the probability is 0 or 0% and not zero or none written as words. Despite this, the question was generally done quite well.
(b) It seemed that the majority of students know that the probability of something not happening is 1 minus the probability of it happening, hence many students gained the mark for this question.
(c) This question was quite demanding for many students at this level. However, a pleasing number gained full marks and if they did not, then one method mark was often gained for working out the number of red bricks (8) or the fraction of blue bricks $\left(\frac{3}{5}\right)$ in the bag.

Question 15

It was noticeable how poorly this question was done. With a total of 10 marks available, many students gained 0 marks or just 1 or 2 marks. Many students are obviously confused by the terminology of mode, range, median and mean. A number of students left the answer spaces blank and of those who tried, the range was often given of the frequencies rather than the scores, the mean was found by adding the frequency column and dividing by 6 or dividing the total of the score column by 6. The final part of the question, which asked about the probability that the spinner will land on the number 4, was frequently seen as quite unrelated to the rest of the question. Very few students linked their answer to the table at all, $\frac{1}{6}$ being a popular incorrect answer.

Question 16

(a) and (b) The majority of students were able to read the correct information from the travel graph for these two parts.

(c) The majority of students were able to correctly show on their travel graph Lia getting home at 16 30 but they were unable to show the time of 1½ hours at the shopping centre.

Question 17

This question was quite challenging for many students, with many leaving it completely blank.

(a) There were only a few students who gained full marks for this question. A few students gained one method mark for an 'x' labelling either *QMR* or *QRM*. We feel that many students probably knew this and it is important that they realise that some correct working on the diagram could be worthy of credit.

(b) Many students at Foundation level did not know where to start with this question. They did not know either the angle sum of a hexagon or a method to find this; many thinking the angle sum of a hexagon is 360° or 540°.

Question 18

(a) The majority of students were able to correctly expand the brackets.

(b) Many were able to correctly factorise this expression.

(c) It is very important that students take notice of the statement: 'show clear algebraic working' as without this working they will gain no marks, even if the answer is correct. A trial and improvement method is not satisfactory either. We also want to see student working with a correct equation throughout to gain the method marks. Many students were unable to do this and often got mixed up in this particular case with the −3 and then subtracting 8 from this.

(d) Many students were able to expand the brackets correctly but some were unable to collect together −2*y* and +10*y*. However, if full marks were not gained, students often picked up a method mark for 3 correct terms out of 4 or for all terms correct ignoring sign errors.

Question 19

A minority of students at this level were able to gain full marks on this question. Most students either gained full marks or no marks. It was common for them to think that Sarah got $15 or even Emily got $15 and work with this. Some even thought there was $15 to be shared in the given ratio. Students must read the whole of the question very carefully!

Question 20

(a) Many students showed little understanding of what to do with this inequality.

(b) Students were more able to do this part of the question than the previous part and a good number gained full marks. Some students were able to pick up one mark for a list with one extra (usually 2) or one omission (usually −3 or 0).

Question 21

This question was, in most cases, very challenging for students on Foundation level. A very small number came up with the correct answer. Many left the question blank and many did calculations with 39 and no mention of cos(39). A few made a promising start by writing $\cos(39) = \frac{11.3}{x}$ but this was then followed by $x = 11.3 \times \cos39$; they gained 1 method mark for a correct initial statement.

Summary

Based on their performance on this paper, students are offered the following advice. They should:

- have ample practice on terminology such as edges, vertices and faces; mean, median and mode; area and perimeter.
- be coached in ensuring they read the questions carefully, ensuring they are using the correct methods and giving the answer that is required.
- ensure adequate working is shown for all questions – this means showing the stages they have gone through to get their final answer, even if they have used their calculator.
- always check their work carefully.
- show working for angle questions on the diagram; there are often method marks available for working and we generally allow angles correctly worked out and labelled on the diagram.
- practice money calculations where some change is involved.

PAPACAMBRIDGE