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# Examiners' Report/
# Principal Examiner Feedback

## January 2016

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

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The candidature was well prepared for this paper. There were very few blank responses seen. Fully correct responses were seen in all questions right up to the end of the paper.

A particular weakness is the conversion of metric units along with a misunderstanding when asked to give reasons in a geometry question; for example, too many students quoted their working rather the stating 'corresponding angles are equal' in question 23a.

1 It was rare to see an incorrect answer in part (a) or part (d). In part (b) the numbers 0.7 and 0.703 were occasionally written in the wrong order. Inevitably, some students gave an answer of 7% rather than 70% in part (c).

2 All parts were generally answered well. However, in part (g) a common error was to find half the difference between the two numbers (35) and then use this to give the answer as 8535 rather than add 35 onto 8516 (or subtract 35 from 8586). In part (h) where many students clearly did not know the metric conversion from metres to kilometres. The most common incorrect method was to divide by 100 rather than 1000.

3 Part (a) was well answered whereas part (b) proved more problematic with 4.85 seen as a common incorrect answer from those who found 50% of 9.7 and therefore failing to appreciate the need to carry out an inverse operation. The common error in (b) was to insert just a single pair of brackets. Some students did misunderstand the question and added $9 \times$ at the start of the given calculation which did, using BIDMAS, result in a correct calculation but did not answer the question set.

4 The requirement to give the answer in millimetres clearly confused some students with 6.5 and 650 occasionally given as the answer rather than the correct 65. While many students were able to measure the angle in (b) accurately, a significant number used the wrong scale on their protractor and so gave $65^{o}$ as their answer. Others looked at the wrong umber on the scale and gave $125^{o}$ rather than the correct $115^{o}$. The final part of the question was not very well done with 'acute' and 'reflex' seen almost as often the correct answer.

5 All parts in this question were extremely well answered.

6 Part (a) did not cause any problems. Part (b) proved more demanding, whilst incorrect answers of 0 or 2 were understandable, the incorrect answer of 19 did suggest a complete lack of understanding of lines of symmetry. In part (c) area was frequently confused with perimeter resulting in 6 being a common incorrect answer.

7 There were a surprising number of incorrect responses in all parts of this question.

8 The answers were generally correct.

9 The answer to part (a) was generally correct. The common error in part (b) was to ignore the instruction to give the answer using the 12-hour clock and so give either 9:15 or 21:15.

10 There was confusion in this question between the vocabulary of vertices, edges and faces with the number of vertices (10) being a common incorrect answer for the number of edges in part (a) and the number of edges (15) seen as a common incorrect answer for the number of vertices in part (b). There was more success in part (c) with the correct number of faces given. In all three parts, 5 was a common incorrect answer probably coming from the number of edges of a pentagon.

11 All parts were well answered. Occasionally, in part (c) the answer was for the probability that the brick taken **was** green suggesting that not all students read the question properly.

12 Parts (a) and (b) were well done although there was evidence that some students misread the scale on the $x$ axis in part (b). Most students were able to provide a correct answer in part (c) those with an incorrect answer generally showed a complete misunderstanding of the question.

13 The common error was to ignore the fact that there were two loaves of bread and 0.5kg of cheese in the list; this eased the question considerably and so no marks could be awarded.

14 The vast majority of students were able to use the correct formula to find the volume of a cuboid.

15 The incorrect answer $e^4$ was sometimes seen in part (a) rather than the correct $4e$. In part (c) 5a – 14b was a common incorrect answer. Inevitably, $x^{14}$ and $y^3$ were common incorrect answers in the last two parts of the question.

16 In part (a) some students gave the answer as a ratio rather than as a fraction as required by the question. In part (b) students were divided between those who tried to find 16% of 192 and those who employed the correct method which generally lead to the award of full marks.

17 The most common error in part (a) was to expand the second bracket incorrectly, forgetting to use the negative in front of the 2. It was disappointing to see so many students fail to deal correctly with $(-4)^2$, working out instead $-4^2$ which culminated in the often seen incorrect answer of $-1$.

18 Whilst a good number of candidates were able to navigate their way through the problem to get to the correct answer, others fell by the wayside at various points. Some got as far as 7 cm for the side of the square and then failed to give the area of the square. Others worked out the width of the rectangle as 6 cm but then used that for the side of the square and so gave the common incorrect answer of 36

19 585 from the use of 1.24 rather than 1.4 to represent the time and 8.63 from those candidates who answer was in km/min rather than the required km/h were seen more often than the correct answer of 518.

20 Giving the frequency rather than the class interval was a common error in part (a). In part (b) one error, from those who had some idea of the correct method, was to divide by 24 rather than by 30.

21 Students who understood the need to find equivalent fractions with common denominators generally went on to gain full marks in this question.

22 Parts (a) and (b) were generally correct. In part (c), some got as far as 5 : 8 but where then unsure how to proceed to the required form of 1: *n*. Others divided 5 by 8 to give a final incorrect answer of 1 : 0.625

23 In part (a) the angle of $57^o$ was given by all students. However, very few gave the correct response of 'corresponding angles' (or other equivalent statements) in part (b) with 'opposite angles' being the common incorrect reason given. In part (b) the majority of students worked with the interior angles of the polygon. This depended on a correct method to find the sum of the interior angles of a pentagon; many failed at this hurdle by quoting an incorrect sum – often 720 or 450 (from 5 × 90).

24 Having got to the correct equation $5y = 4$ in part (a) a significant number of students then gave the incorrect answer of $y = 0.8$. While a good number of correct answer were seen in part (b) a significant number of students were unable to clear the fraction correctly.

25 Many were able to gain one mark for giving three of more correct members of the set; the most commonly omitted member was 100

**Summary**

Based on this performance on this paper, students should

- learn the metric conversions eg. 1 km = 1000m, 1 cm = 10mm etc.
- practice using a protractor to measure obtuse angles (particularly ensuring that the correct scale is used)
- be aware, that when substituting negative numbers into an expression, brackets should be used eg. $(-4)^2$
- ensure that they know how to find the sum of the interior angles of a polygon
- ensure that, when asked for reasons in a geometrical context that geometric facts are given rather than a description of the working.

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