Pearson Edexcel

Examiners' Report

Principal Examiner Feedback

Summer 2018

Pearson Edexcel International GCSE

In Mathematics A (4MA1) Paper 2F

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Students who were well prepared for this paper were able to make a good attempt at the majority of questions. It was encouraging to see some good attempts on the problem questions such as the ratio (Q16) and the percentages (Q17).

On the whole, working was shown and easy to follow through. There were some instances where students failed to read the question properly. For example, in question 16 a significant number found the largest or smallest share rather than the difference between these.

Work on time (Q13b) and problems linked to the mean (Q22) were weak areas for the students sitting this paper.

1 The majority of students were able to correctly answer these questions on basic number work. Common mistakes occurred with part (c) where many students moved the decimal point one place to the left or to the right rather than rounding the number.

2 Students generally gave the correct answers for these 3 questions on probability, any mistakes appearing to be quite random.

3 We saw a good number of correct answers to this question requiring students to find the amount of oil that was bought by Joseph and the cost of that oil. There were a number of students who appeared puzzled with what they needed to do and showed a few random workings, but many were able to pick up at least one mark for realising that Joseph had bought 900 litres of oil or for finding the cost of 1300 litres or the cost of 400 litres. The majority who showed a full method worked accurately and gained all the marks.

4 (a) The majority of students were able to correctly write down the coordinates of *C*. About 10% of the candidates scored no marks here and this was invariably for writing the coordinates the wrong way round.

(b) Almost all candidates were able to measure the line correctly in centimetres in the given range of 3.4 – 3.8 . We saw a small number of 3 cm, probably for approximating or using their ruler incorrectly.

(c) Many students plotted the point correctly and showed us a nice drawing of a parallelogram. A few plotted in various places on the grid and often did not join up to see if the shape looked correct. A suggestion would be, if a certain shape is to be made, join the points and make sure it does look like the shape required.

5 (a) The majority of students were able to give a multiple of 8 that is between 20 and 50, with 32 being the most popular. A few students gave us all the multiples of 8 that were between 20 and 30 and gained the mark as long as there wasn't anything incorrect amongst their values. The few incorrect responses usually gave factors of 20 and 50.

(b) Most students knew that 2 was the only even prime number, but there are a few who think it is 0 or 1.

(c) This question was met with a very mixed response with many thinking it was prime because if could only be divided by 1 and itself, a good enough reason for a number to be prime, but of course 57 is also divisible by 3 and by 19. The correct answers we saw, generally cited the divisibility by 3 as the reason it wasn't prime, but a few told us that

$3 \times 19 = 57$. We only required the divisibility by one out of 3 and 19 and a response of NO to award the mark. Interestingly, a few students said YES but then carried on with a reason that told us the answer should have in fact been NO.

6 (a) Most students were able to continue the pattern correctly. A small number of students lost the mark because they include dots inside the square.

(b) The majority of questions were answered correctly for this part.

(c) We saw many fully correct answers for the number of dots in pattern 13. The ones that were incorrect often continued the sequence but made a mistake in their adding on 4; as long as only one mistake was made and the list was long enough, a method mark could be awarded.

(d) We saw many correct responses but a number gave us the incorrect answer of $n + 4$ rather than $4n$.

(e) This was the more challenging part of the question and some students struggled with how to tackle it. A good number gave the answer 88, ie the number of dots in the largest diagram that could be drawn with less than 90 dots and were awarded a method mark. Dividing 90 by 4 was also awarded the method mark and frequently seen without the correct answer of 22

7 (a) This was mostly given as a correct answer of 7^5 but a few candidates worked out the value and gave an answer of 16807

(b) We saw a number of good responses able to clearly show us that 64 is both a square number and a cube number. If not correct, some students were able to gain one mark, and this was most likely for showing us that 64 is a square number. A few students divided 64 by 2 and by 3, missing the point of the question and a number of students evaluated 64^2 and/or 64^3, showing a lack of understanding.

(c) We saw mostly correct answers for the value of 11^3.

(d) Almost invariably the answer was correct for the square root of 98.01

8 (a) The involvement of two negatives in this substitution was a challenge to many students who often gave the incorrect answer of 13 rather than 37. This was often because they worked the 4g out separately, showing $4 \times -3 = -12$, but then wrote 25 – 12 rather than $25 - -12$. A few students believed they were doing the sum 25 – 4 – 3. A small number of students had an expression still involving the variable g instead of a numerical value for their final answer.

(b) The expanding and simplifying with the addition of another term on the end was confusing for some students. Most, however, were able to benefit from at least one method mark for the correct expansion of one bracket. Some gained two method marks, for both brackets expanded correctly, but we saw few fully correct answers where they had been able to properly simplify.

9 (a) Most students were able to correctly shade a segment, some shading the given area bounded by the line *RS* and the circumference but a few drew their own. Shading all areas apart from the triangle was seen and also the shading of the major sector *ROS*.

(b) We saw several correct answers but many incorrect, giving answers such as radius, tangent, sector and in some cases a blank response.

(c) Students found this question which used the 'angle between the tangent and radius' circle theorem quite challenging. We saw a number of correct answers, but many spurious attempts that used the values such as 180° and 360° incorrectly. The answers that were correct, rarely had a correct reason and so generally 2 marks was the maximum out of 3 that was awarded.

10 (a) a good number of students were able to find the correct values required and give them as a probability. A number just gave the value of 69 which, without a denominator gained no marks. We also saw a few students using the wrong fruit and so gave an answer other than 69, but if over the correct denominator of 135, they gained a method mark.

(b) Many students failed to be able to relate the table with drawing a pie chart. Some were able to get the correct fraction of 27/135 but then multiplied by 100 or another incorrect figure. A small number of students didn't interpret the wording of the question correctly and expected a pie chart to be visible on the paper.

11 (a) Most students were able to correctly put the given values into the calculator and come up with the correct answer which gained 2 marks. Few students showed

intermediate work, so if they showed a wrong answer, they generally gained no marks.

(b) We saw a number of correct answers, but there was very strong evidence to suggest that students still get confused between 3 significant figures and 3 decimal places.

12 (a) We saw a few fully correct answers, but many incorrect with all sorts of wrong working such as multiplying the lengths of all the sides, adding the sides, multiplying the lengths of all sides of the quadrilateral *ABCD* and so on. We awarded a method mark if a student also added on the area of triangle *ADC* to find the area of quadrilateral *ABCD* – they were clearly asked to find the area of a triangle. The mark for units was an independent mark and was frequently awarded, although some students did not appear to read the sentence regarding units and gave none. A number of students had cm or cm^3 as the units for area.

(b) Few students gave the correct reason of 'alternate angles' with many saying things such as 'they are the same' and 'they are reflections of each other'. A few got mixed up with angle types and gave 'corresponding angle' and a few gave 'Z' angles which unfortunately was not enough.

(c) It was pleasing to see such a lot of students knowing that the line through *D* and *C* was $y = 4$. Of the incorrect answers, $x = 4$ was common but some students also gave responses such as $y = x + 4$ and just sets of coordinates were seen a number of times.

13 (a) We saw a good number of correct responses for this temperature change question that was set in a context. We saw a good number showing a method where they showed the heights from 800m to 2000m going up in 300m chunks with the temperature going down with each step – this method worked very well and generally gave the correct answer. If this method was seen with a mistake, method marks were available. More formal methods were also seen but occasionally students added on 8° rather than subtracting it from 6°.

(b) Students often have a problem with time calculations and seeing the correct answer in hours and minutes was rare. However, many students were able to pick up method marks for showing the time for each part ie $12 \div 5$ and $800 \div 10$. They then got confused with times in terms of the decimal parts and how many minutes in an hour.

14 (a) A correct answer was often seen in this part but a few students forgot to include the probability of **CC** in the counting of at least one card marked **C**, gaining the method mark, but losing the accuracy mark.

(b) We saw a small number of correct answers for this question on estimating the number of times an event will happen, but many students did not appear to relate it to part (a) and so gave many and varied incorrect responses, often over 80 which was the

total number of times Javier was taking out a card from each set. This type of question is very common with a probability and students need to be reminded what is needed.

15 We saw some correct answers but many students having little idea of how to find the angle marked x. There was a method mark for a calculation leading to the base angles in the isosceles triangle being 50° but many failed at this as they thought all the angles in the triangle were 80° or that one was 80° and one was 20°. If they correctly found 80° the next method mark was for a fully correct method, ie adding this to 90° and subtracting the total from 360°. However, knowing that each angle in a rectangle was 90° also seemed unknown to many.

16 This ratio question was done well by many students, but far too many did not read the question carefully enough and gave the largest share or the smallest share and not the difference between these. A small amount divided the total (3450) firstly by 2, then by 6 and then by 7 in an incorrect way to find the three shares.

17 This question was generally well solved and if full marks were not gained a student usually benefitted from at least M2 for finding Gopal's new monthly pay. A few stopped at the stage 1.125 or 112.5% and lost the final accuracy mark. Some students, once they had gained M2 for 21600, used a trial and improvement method to try to find the percentage increase that Jamuna was given; this rarely gave the correct answer.

18 (a) This question was poorly done on the foundation paper, with few understanding what was needed. Some merely swapped the M and the a around in an attempt to make a the subject.

(b) Having an inequality sign rather than an equals sign seemed to 'throw' students entirely and they struggled with this question, often not showing any correct method. There were students that were able to correctly solve the inequality but far too many thought the answer was $x = 8.6$ or just 8.6. These students were unable to gain the final method mark even if we saw the correct solution in the working. It is essential that students realise that for inequalities there is not a single value solution.

(c) We saw very few correct answers for this question on factorising fully. Many did not even show any type of factorisation, but instead, tried to simplify the terms.

19 (a) Finding the curved surface area was very challenging for all but a few of the students sitting this paper. We saw many calculations for the area of a circle or calculations without π in them.

(b) This was a very challenging question and most students showed little understanding of similarity and what they meant in terms of this question. Few even gained a mark for showing a correct ratio as they did not understand how this could relate to the question. Many responses across this question were left blank.

20 Students are getting used to the 'show that' fraction question and on the whole if they understood subtraction of fractions were very good at showing us how to arrive at the given answer. Those who did not often gained M1 for correct improper fractions to start with. Many 'fudged' stages to try and show us they could gain the correct result but had nothing correct prior to the result. It is essential that students show us every stage in their working so that can benefit from full marks. The few decimal solutions gained no marks at all.

. 21 We saw few responses that merited any marks at all for this trigonometry question. Some started correctly with a statement such as $\cos 52 = 12.6/x$ and gained M1 but they were unable to make correct progress because they were unused to having x as the denominator in their equation.

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22 (a) This question caused a lot of student's problems and we saw many attempts with spurious working. Some who knew something about the mean gave the answer 70.2 as they thought the mean for both classes would be the mean of the 2 values for the mean of class A + class B, ie $(75 + x) \div 2 = 72.6$. It was rare to see a correct response.

(b) While some students did not make progress on this question, there were a lot who gained M1 for giving us a correct highest value. Not that many were able to give the range of both classes together with other calculations such as the mean of the two top values.

23 We saw only a small minority of correct responses for this simultaneous equation question. In fact, many were blank and it seemed some were using a trial and improvement method to find x and y which even if correct would have gained no marks as no algebraic working was seen.

24 (a) Very few students knew what the approach for this question was and just calculated the value on their calculators. Clearly we were targeting work on indices and powers, so this gained no marks. Knowing $8 = 2^3$ and showing this in the quotient would have been awarded M1, so students need to be reminded if they see numbers such as 8 appearing with powers of 2 this is a likely starting point.

(b) This part was done better than part (a) and it seemed the lack of a quotient helped them. Many benefitted from a method mark for seeing 13^{-24} although many put the

whole calculation in their calculator, giving a commonly occurring wrong answer which gained zero.

Summary

Based on their performance in this paper, students should:

- Show clear working at all times
- Learn circle terminology
- Know angle facts, especially ‘alternate angles’ and angles in isosceles triangles
- Read questions very carefully
- Work on time, remembering decimal parts of an hour are not minutes

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