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Examiners' Report
Principal Examiner Feedback

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**Pearson Edexcel International GCSE
Mathematics (4MA1)
Paper 2F**

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International GCSE Mathematics 4MA1 2F Principal Examiners' Report

Those who were well prepared for this paper made a good attempt at all questions. It was good to see several students having a go at the grade 4 and 5 questions and gaining a couple of marks for these, even if they could not see the question all the way through. The paper differentiated well.

Overall, working was shown and was followable.

Some students got confused with area and perimeter and with surface area and volume, so learning and remembering the correct terminology is vital for maximising marks.

Question 1

- (a) almost all student gained the correct answer. The few incorrect ones gave the number of ice creams sold on Tuesday.
- (b) Almost all students were able to complete the pictogram with the correct symbols for the number of ice creams sold on Friday.
- (c) The majority of students were able to correctly identify the day when the least ice creams were sold.
- (d) Most students were able to add all the ice cream sales. Marks were lost for incorrect sums, where the key was not used accurately. Some students had not completed the pictogram for Friday and so did not sum all the days for a correct total.

Question 2

- (a) Mostly correct and those that weren't often put them in the order of 1, 7, 12, 19 without regard for place value.
- (b) Answers seen were decimal place, unit, hundred, hundredth. 0.6 is insufficient as it does not tell us what the 6 is actually worth any more than the number that is written.
- (c) A good number correct. Some gave 3.50 and others thought you rounded both decimal numbers up giving 3.59
- (d) Nearly all gave the correct answer of 60% for 0.6 with only the occasional 6%

Question 3

- (a) A few left blank but it was very hard to find a wrong answer.
- (b) Almost all correct with the occasional arithmetic error in multiplying 4 by 7 and giving 21p for example.

Question 4

- (a) 54.8 and 5480 were seen but most students gave the correct answer.
- (b) 460, 4600000 and 46 were seen but the majority were able to correctly change 4600 millilitres into litres.
- (c) This was quite well answered with many students being able to find the missing side *AB*. Some students incorrectly divided the perimeter by 2 before subtracting the given side, not realising the order in which the operations needed to be done.

Question 5

- (a) Most were able to correctly recognise the mode, but a few showed calculations for the mean and the median and largest number in the list were also sometimes given.
- (b) The majority of students identified the range correctly; a mark was given for subtraction using one of either the largest value or smallest value which benefitted the student who missed a value and for example used $18 - 13$ rather than $19 - 13$

Question 6

- (a) It was very difficult to find a response that did not gain the mark.
- (b) This was well answered; however some students made the question much more difficult than it needed to be by writing multiple sentences when a simple term-to-term rule was sufficient.
- (c) There were a lot of incorrect answers such as $n + 4$ or $n = 4$
A fair few correctly showed $4n$ and some wrote $4n + 0$ which of course also gained the mark.

Question 7

This question was very well attempted with many students gaining full marks. Those that didn't get full marks often stopped at just finding the total of the calls and messages, giving an answer of \$18.50 and forgetting the monthly charge. Reading the question carefully and checking you have done as requested would be good advice here.

Question 8

Many students were able to correctly find the missing angle of 58 degrees. Sadly, many ignored the instruction to give a reason for their answer or were not able to write down a reason. Some gave a reason that did not match their method and gained no marks.

Question 9

The volume of a cuboid continues to cause problems for some students. A variety of approaches including use of surface area calculations or addition of lengths was seen. In general, though, most students could multiply the three dimensions correctly.

Question 10

- (a) The method mark was for writing the correct fraction and the accuracy mark for correctly simplifying this. Most students scored full marks for this.
- (b) This was poorly answered by some where they tended to find 9% of 25 rather than 9 as a percentage of 25. Those that knew what was required were generally able to give the correct answer of 36
- (c) This was well answered when the price of one sandwich was found. Unfortunately, some students got quite confused and tried different calculations with the numbers 16, 28 and 27, the three numbers stated in the question.

Question 11

The majority were able to draw a triangle of the correct dimensions using the given line segment AB . However, too many did not have construction lines shown, possibly due to the correct method not being used; only 1 mark out of 2 was awarded for such diagrams lacking arcs.

Question 12

- (a) There was still some evidence that students do not know that $6p$ and $4d$ requires a multiplication and eg $6p$ being 68 rather than 6×8 . In general, though, 36 was obtained and full marks awarded to several students.
- (b) Problems with rearranging with negative values on both side of the equation caused several students to only gain a method mark for a correct substitution.
- (c) Most students were able to pick up a method mark for expanding the bracket correctly but rearranging the equation to get x terms on one side and number terms on the other side was beyond many students which was a shame.

Question 13

Given most students must use 'time' in everyday life it is surprising how hard they find any question on this topic. There were several ways this question could be tackled but by far the most popular method was to write down the times after 6 am for both trains. The trains to New Delhi were considerably easier to work out, being every 40 minutes, but several students were able to gain M1 for writing down the times of the next 2 trains to each place. There were some misunderstandings where students got 6 40 and 6 48 and then thought the next trains should also be 8 minutes apart, giving 7 20 and 7 28 rather than 7 20 and 7 36

Sometimes one saw a correct list of times with 10 00 appearing in both but students gave the answer 14 00, missing the first time they left together.

Question 14

Full marks were often gained for this question, but it was surprising that some students offered an answer that was not one straight line, which makes it seem like they are not familiar with a question which takes on the same format year after year. The place where students often went wrong is substituting the negative values for x into the equation for y and sometimes changing the negative gradient into a positive one.

Question 15

There were often errors putting values into the correct regions of the Venn diagram, with more than just 2, 10 and 14 in the outer region and sometimes repeating 12 in the intersection. For part (b) some students clearly got mixed up with union and intersection often giving the incorrect answer of $\frac{1}{9}$

Question 16

There was good use of the time formula in many cases and several students were able to gain 2 marks for 0.75. The tricky part was realising that 0.75 converts to 45 minutes and not 1 hour 15 minutes and so the accuracy mark for 2.20 was often not awarded.

Question 17

(a) The correct answer of 9 was seen a good number of times. Some students gave the answer as 3^9 which we allowed. A few calculated the answer as a number rather than as a power of 3 and gained no marks. It was pleasing to see very few multiplying the indices.

(b) The correct answer of 21 was seen a good number of times. A few probably intended to multiply but got their tables incorrect and said $3 \times 7 = 28$

One or two wrote -4 by doing $3 - 7$

(c) This style of question has been assessed regularly and based on candidate responses on this paper, there was some evidence of improvement in understanding. Most knew that the powers of 7 had to be added in the numerator, but sadly, some then attempted to divide 10 by 6 for the final answer, rather than subtracting.

Question 18

This question was quite challenging for Foundation tier students with many failing to gain full marks. However, many made a reasonable start by expanding 2 sets of brackets but the obstacle was equating the correct two expressions to get a correct equation. Numerical methods were seen occasionally and were often successful.

Question 19

(a) Several students did not know what was required here and gave what seemed like random percentages or fractions. A few just gave $25/70$ rather than $(25 + 6)/70$ One or two wrote 31 over 71 or 72 and this suggested they added up the frequencies incorrectly, not realising that they were told in the first sentence that there were 70 friends.

(b) This was done quite well for the most part. Most students divided by 70, but some divided by 5, the number of class intervals or 100. A few candidates used end points rather than midpoints and could gain M2 if they divided by 70. A few tried to multiply each frequency by 8, the width of the class interval.

Question 20

For many students on Foundation tier, similar triangles is a real challenge and many responses were found to be blank. Correct answers were more commonly seen for part (a) than for (b) but this is not surprising. Students who gained no marks but showed working had no understanding of proportionality and it was not uncommon to see $45 - 20 + 36 = 61$ or $54 - 25 = 29$ for part (a) and similar reasoning for part (b).

Question 21

A lot of students did not know that the angle sum of a pentagon is 540 or of a method to find this value. Lots of totals of 360 degrees and sometimes 450 were used for the pentagon. Those who did use 540 usually went on to find the 115 degree angle and for this they were awarded M2. $360/8 = 45$ was often used as the interior angle of the octagon rather than the exterior angle. Only a small number were successful in getting to the correct answer of 110 degrees.

Question 22

Most students were able to find the total selling price (29.4) or the cost of 1 bottle (1.75) scoring the first mark. However, many were unable to continue correctly, often finding the difference of $29.4 - 21$ but then dividing this by 29.4 rather than 21 before multiplying by 100 reaching the incorrect answer of 29%. Those students that found $29.4 \div 21 = 140$ often did not go on to subtract 100 to get the correct answer of 40%, 2 marks were given for this value.

Question 23

A lot of students made errors calculating the compound interest. The most reliable and efficient method was to use the multiplier, but a lot of errors were made determining what the multiplier was and how to use it. Other students did not realise that with compound interest the amount of interest received each year increases, but used the 4.5% of the 25 000 dollars every year. 1 mark was the most frequently occurring score, either for a correct method to find 4.5% of 25 000 or for 1150×3

Question 24

- (a) Very few correct answers were seen. Common incorrect answers were 0 or $3x^2y$, just removing the bracket.
- (b) This was done fairly well but not all students were familiar with the concept that they had to factorise first and 'hence' solve the equation using their factors.

Question 25

Some correct solutions showed a good understanding of standard form. A number of students divided the numbers the wrong way round and we saw addition and subtraction of the numbers as well. A few gained the correct value from the division but did not gain the final accuracy mark as they did not change the 'answer' into standard form.

Question 26

Of the few who recognised the need to use trigonometry, a pleasant proportion followed through correctly to get the answer of 42.2. A few used tan and then Pythagoras correctly, and also gave the correct answer. Unfortunately, some who could state the correct ratio of cosine, were unable to rearrange correctly and used the method $AB = 9.3 \times \cos 38$ rather than $9.3 \div \cos 38$

Summary

Based on their performance on this paper, students should:

- Read questions very carefully and even when they think they have the answer, check they are giving what was requested.
- Read and apply the key on a pictogram
- Remember the difference between perimeter and area
- Remember the formula to find the volume of a cuboid
- Check if answers are realistic
- Check any rounding instructions.
- Show clear easy to follow working
- Know how to use the multiplier for compound interest
- Know the difference between and interior angle and the exterior angle of a polygon.

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