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Pearson Edexcel International GCSE
Mathematics A (4MA0)
Paper 4HR

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Grade Boundaries

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Good solutions were seen to all questions. The most able candidates performed well throughout the paper, including the more challenging questions towards the end of the paper

On questions where there is more than one step needed to get to the final solution, candidates would be well advised to keep full accuracy until the final answer. Giving a geometric reason was a weakness.

1 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

2 In part (a) the angle of 57^o was given by almost all students. Too many quoted 'alternate segments' or 'opposite angle' rather than 'corresponding angles' (or other equivalent statements)

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; some failed at this hurdle by quoting an incorrect sum – often 720 or 450 (from 5 × 90).

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

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

5 Whilst many students 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

6 Inevitably, x^{14} and y^3 were common incorrect answers in the first two parts of the question. The common error in part (c) was to fail to expand the second bracket correctly with −10 given as the final term rather than +10. Having got to the correct equation $4y = 5$ in part (d) a significant number of students then gave the incorrect answer of $y = 0.8$. While a good number of correct answers were seen in part (d), some students were unable to clear the fraction correctly.

7 Giving the frequency rather than the class interval was sometimes seen 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. A significant number of candidates multiplied the frequency by the class width rather than the midpoint.

8 Students were divided between those who tried to find 16% of 192 and those who employed the correct method which generally lead to the correct answer and the award of full marks.

9 While a good many correct answers were seen, 585 from the use of 1.24 rather than 1.4 to represent the time and 8.63 from those whose answer was in km/min rather than the required km/h were frequently seen.

10 The correct answer was nearly always given in part (a). Occasionally in part (b) one of the figures used was incorrect. The most common error in part (c) was to subtract rather than divide.

11 Having found the correct value for half the circumference of the circle a significant number of students then subtracted that from 60, the perimeter of the rectangle, rather than add on the lengths of the five straight sides. Too many students did not read the question carefully enough and found the area of the shaded region rather than the perimeter.

12 Expanding the brackets was done very well. However, too many students failed to deal correctly with the negative sign between the two given expressions.

13 In part (b) some students gave the length of AE rather than EC as their answer.

14 The points given in the table were generally correct although the occasional error in plotting these was seen. Part (c) was done very well but only the most able candidates were able to cope with part (d). In part (d) the method to be used was specified in the question so the award of any marks depended on the evidence of the correct straight line, $y = x - 3$, drawn on the graph; some students failed to do this and so could not be awarded any marks even if their answer was correct.

15 Those students who knew how to show the conversion of a recurring decimal into a fraction generally gained full marks. Some tried to quote results such as $0.0666\ldots = \frac{6}{90}$ such statement gained no credit.

16 Solutions for this question tended to be completely correct or completely incorrect. The common error was to start with the wrong equation, for example, $Q = kt^2$ or $Q = \frac{k}{t}$.

17 Those who were able to complete the probability tree diagram correctly then generally went on to gain full marks. However, there was some confusion over the completion of the tree diagram with 0.5 being a common incorrect probability for the top 'not late' branch with 0.3 and 0.1 on the bottom pair of branches. Students who made this type of error still frequently gained full marks in part (b) and the two method marks in part (c).

18 This was another question where those who understood the concept, this time histograms, gained full marks and others gained no marks. Few students gave any method for this question which may have helped some candidates who gave incorrect answers pick up 1 or 2 marks out of the 4.

19 Many correct answers were seen. However, some students having successfully isolated the terms in g then divided by $9e$ rather than take g outside a bracket as a common factor.

20 The common error from students who successfully found a common denominator was to then expand the second bracket incorrectly giving $6x + 12$ rather than the correct $6x - 12$. Another common error was to expand $3(2x + 5)$ incorrectly to get $6x + 30$

21 Many correct answers were seen from a variety of different methods. Some students did round their answers prematurely, for example $\sqrt{450}$ (=21.21…) was rounded to 21, this resulted in a final answer that lay outside the allowable range. There was, however, some confusion from a minority of students as to which angle was angle *DEB* with some clearly calculating angle *DBE* then giving that as their answer. Students would benefit from a better knowledge of labelling lines and angles as this would help clarify their intentions for their method.

22 Having expanded the brackets correctly a common error was to then equate a^2 to 49 and so give $a = 7$, those who correctly equated $a^2 + b$ to 49 generally gained full marks.

23 Those students who realised that they had to use $\frac{1}{2}ab\sin C$ for the area of a triangle generally then went onto gain 3 marks for the correct angle 59^o. It was encouraging to see a good number of students realise that the second angle came from 180 – 59.

24 This was a standard type of high grade simultaneous equation question. It enables many students to demonstrate good algebraic technique. However, some students having found both values of x then discarded the negative one not realising that they should be giving two pairs of solutions. Where there are two pairs of solutions students should ensure that they correctly pair the values of x with the values of y.

Summary

Based on this performance on this paper, students should

- ensure that, when asked for reasons in a geometrical context that geometric facts are given rather than a description of the working.
- ensure that they read the question carefully to make sure that the answer given is the one require.
- maintain full accuracy throughout a calculation only rounding the final answer.

- ensure that they understand the use of three letter angle notation ie. be able to identify angle *ABC*

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