Pearson Edexcel

Examiners' Report
Principal Examiner Feedback

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in Mathematics A (4MA1) Paper 2FR

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Introduction

This was an accessible paper and students who were well prepared were able to gain a good measure of success on the majority of questions. Manipulation of algebraic equations and expressions continues to be a significant weakness, hence questions such as 9(d), 17, 18(c), 21, 23, 25(b) and 26 were all areas where even better candidates lost significant marks.

Question 1

All five components of this question scored well. The mark scheme was eased a little by allowing any common factor of 20 and 30 to be written as an answer in part (b), (rather than all the factors).

Question 2

In part (a) a number of students were unaware of the concept of a tally system to record frequencies. As a consequence some answers had numerical values placed in the tally column and these were then copied into the frequency column or the latter was left blank. Responses like this only scored 1 mark.
In part (b) an answer of 8 was a common incorrect answer. Many candidates failed to ensure that their frequencies added up to 24.
Stating facts from the frequency table was not enough to gain credit in part (c). Common examples of this were "(the dice was biased because) there was eight 3s" or "the frequencies were not the same". The question wanted to tease out the fact that there were too many occurrences of 3, or we would expect about 4 occurrences of each number, though other responses gained credit.

Question 3

Candidates fared better in part (b) than part (a). In the latter, many did not label an acute angle as requested but were not penalised. Nor were they penalised if they labelled one arm of an acute angle with a letter "a". It possibly confused some candidates having a capital letter "A" on the given line and being asked to label the angle with the same letter, but in lower case. In part (b) a few candidates lost the mark by extending their drawn diameter significantly beyond the circumference of the circle and there were a surprising number of radii drawn instead of diameters.

Question 4

All five components of this question were a good source of marks and candidates performed well even on the more challenging part (e).

Question 5

This question was not especially well answered. Weaker candidates often thought that the length of *AD* was 180 cms and used this as a starting point. They ignored the request of the question and

simply subtracted 96 from 180. Others added 30 to 96 as their starting point (and then usually subtracted this from 180). Frustratingly many reached $CD = 22$ cms but didn't know what to do with this value or treated this as their final answer.

Question 6

Candidates who failed to gain 2 marks often picked up 1 mark by reaching 45 minutes or 9 hours and as such one component of their answer was correct.

Question 7

Parts (a) and (b) were a good source of marks, though occasionally candidates wrote the x and y coordinates the wrong way round.
In part (c) many candidates were getting only the y coordinate correct and gaining 1 mark. Common mistakes for the x coordinate were values of -1 or 0.

Question 8

The table was filled in correctly in part (a) in a majority of cases and most candidates then gained the 1 mark on offer in part (b) though many offered a truncated decimal as an answer rather than a fraction. This was not penalised.
Part (c) was the most challenging part of this question but again candidates performed well. A common incorrect answer was having a denominator of 19 rather than 33.

Question 9

The first 3 parts of this question all scored very well with a majority of candidates picking up all 3 marks on offer.
Correct answers were very rare in part (d) and many candidates were unable to pick up even 1 mark.
Sight of 28 (for the pattern number) in part (e) was sufficient to secure the 1 mark available.

Question 10

Of the two values to be found, n, the largest value, was the easiest for the candidates to calculate. The median being the midpoint of 6 and an unknown value (m) defeated many candidates.

Question 11

Mistakes were rare in parts (a) and (b).
Part (c) required a full correct method to secure the method mark.

Question 12

Both components of part (b) caused considerable confusion. In part (bi) many wrote f^4 or f^9 or simply wrote 6561. Part (bii) proved to be even more challenging as candidates lost sight of the

fact that $f = 9 \times 9 \times 9 \times 9$ and could not cope with converting f to a power of 3. Common answers here were f^3.
In part (d), many candidates could produce a factor tree or a division ladder showing how 800 was to be broken down into prime factors but some were unable to show a correct answer as a product of these factors.

Question 13

Most candidates picked up the first 2 method marks available by working out that Betsy had \$45 to spend on a T-shirt and a bag. A majority then deviated from the correct method by dividing 45 by 2 and then adding \$12 (rather than \$6) to get the price of the bag.

Question 14

In part (a) the correct conversion of metric units was the key in this question. Many thought that there were 100 grams in a kilogramme hence $\frac{8}{15}$ from $\frac{40}{75}$ was a common wrong answer.
Correct answers were rare in part (b). Many candidates lost sight of the fact, from part (a), that the weight of Iona's cereal was 40 grams. Candidates fared much better in part (c).

Question 15

Awarding full marks for this question was extremely rare. Candidates still think that the phrase "Give a reason for each stage of your working" refers to showing numerical calculations rather than stating geometric reasons.

Question 16

More able candidates scored well on this question correctly using the midpoints of each interval to find an estimate for the total spend in the grocery store. This was a question whose format is quite common and hence a good source of marks in the second stage of the paper. A few lost 1 mark by dividing the correct answer of £2920 by 52 to reach the average weekly spend.

Question 17

Most candidates opted for a numerical / trial and improvement approach, rather than an algebraic treatment. This generated a good deal of written experimentation but a number were successful in reaching the correct answer.

Question 18

Many candidates failed to gain the mark in part (a) by giving an answer of $3e^2 - 5$.
In part (b) the success rate was higher. Candidates who failed to score here didn't understand the meaning of the term "factorisation" and usually gave an answer of $40f$.
In Part (c) many forgot to raise the letter p to the power 3. Very few scored all 2 marks. Candidates had to get 2 of the 3 components correct to score 1 mark. Writing 4^3 on the answer line, instead of 64, was insufficient to gain credit.

Question 19

With the absence of a clear instruction to use Pythagoras, weaker candidates struggled to make a sensible start. Those who recognised this was the correct approach usually gained full marks.

Question 20

Converting 3 hours and 36 minutes into hours posed problems at the outset. Most opted to divide 2470 km by 216 minutes, to reach 11.4 as a final answer. It is worth emphasising that candidates should look at their final answer to see if the size is realistic (11.4 km/hr is rather slow for an aircraft embarking on a journey of 2470 kms).

Question 21

Many candidates missed the trick of simply adding the two equations together at the outset to eliminate y. Consequently the algebra (where attempted) became challenging. Frustratingly many candidates, having reached $10x = -5$ stated that $x = -2$ from this.

Question 22

Correct final answers were rare. Most candidates started by finding 19% of 20,000 (=3,800) but then taking a wrong path after that by calculating 20,000 – 3 x 3800.

Question 23

Placing values into a given word formula and performing algebraic manipulation, was beyond most candidates. The few who reached the correct answer did so usually by step by step numerical approach, ($27 \div 30 = 0.9$, then $0.9 \div 1.2$ etc.)

Question 24

All three components were generally done well. Roughly half of responses in part (c) didn't put their answer in standard form as requested and therefore dropped a mark.

Question 25

Part (a) was generally answered well with candidates showing a good understanding of the constraints placed by the inequality symbols.
In part (b) almost all candidates had no idea of the demand of the question and many answer spaces were left blank as a result, others simply copied out the graph equations from the given diagram.

Question 26

This was the most demanding question on the paper and many candidates did not know how to make a start. Some picked up 1 mark for working out the size of the third angle in either triangle *ABC* or *DEF* but could proceed no further.

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