Pearson
Edexcel

Examiners' Report
Principal Examiner Feedback

Summer 2023

Pearson Edexcel International GCSE
In Mathematics A (4MA1) Paper 1F

Edexcel and BTEC Qualifications

Edexcel and BTEC qualifications are awarded by Pearson, the UK's largest awarding body. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers. For further information visit our qualifications websites at www.edexcel.com or www.btec.co.uk. Alternatively, you can get in touch with us using the details on our contact us page at www.edexcel.com/contactus.

Pearson: helping people progress, everywhere

Pearson aspires to be the world's leading learning company. Our aim is to help everyone progress in their lives through education. We believe in every kind of learning, for all kinds of people, wherever they are in the world. We've been involved in education for over 150 years, and by working across 70 countries, in 100 languages, we have built an international reputation for our commitment to high standards and raising achievement through innovation in education. Find out more about how we can help you and your students at: www.pearson.com/uk

Summer 2023
Publications Code 4MA1_1F_2306_ER

Introduction

The majority of questions were well-attempted by all students in this cohort. Methods were generally shown and apart from the final few questions, it was usual to see marks awarded on all attempts. Below is a detailed review of each question and some key areas for improvement, in bullet point form, for future cohorts.

Question 1

Part (a) was answered well with most students able to shade 12 squares successfully. Part (b) also saw lots of success with almost all students able to give a correct answer of $\frac{3}{4}$. Part (c) saw most students score B1 for an answer of 0.03; incorrect answers seen included 0.3 and 3.00. Finally, part (d) also saw almost all students gain B1 for a correct answer of 14.

Question 2

Part (a) was answered very well with almost all students gaining 1 mark for an answer of Mandarin Chinese. Most students were able to give a correct answer of 115 in (b); the most common incorrect answer seen was 141 from finding the sum of 128 and 13. Part (c) saw less success with only around half of students able to give the correct answer; many misinterpreted the information in the question and found ¼ of 75. The majority of students gained B1 in part (d); for those that didn't the most common errors were to start with 'eight million' or 'eight hundred thousand'.

Question 3

Part (a) saw many students awarded 2 marks for finding the correct frequencies for each fruit. Some students found the tallies but not the frequencies, or filled the frequency column with fractions such as 5/20, 2/20 etc. Some made one error with their frequencies and students should check their answers fit the information given in the question e.g. total frequency should be 20. Part (b) was also answered well with many gaining 3 marks; there were 3 follow through marks available for the students who made an error in (a). Some students failed to label their bars, losing 1 mark.

Question 4

Part (a) was answered very well with almost all students able to give a correct answer of 16 15. In (b) many gained 2 marks for both correct values; some lost a mark for one incorrect value.

Question 5

In part (a) the majority of students were able to simplify correctly but some gave the common incorrect answer of p^4. Part (b) saw a good number of students gain 2 marks for an answer of $12e + 4f$; commonly seen incorrect answers were $12e - 4f$ or the + sign missing. In (c) most students gained B1 for an answer of 6; common incorrect answers were 20, 1.8 and −6. In (d) many correct solutions were seen, some with working and others without. Some students conducted an incorrect inverse operation such as 43 + 7 or 36 – 4.

Question 6

In part (a) most students gained 2 marks for an answer of 7.5; of those that didn't, almost all gained 0 marks and did not show any signs of a correct method. It was a similar story for part (b) with around half of students gaining 2 marks for a correct answer of 625, and most of the rest gaining 0, unable to make any correct progress with the method.

Question 7

Most students were able to gain at least 1 mark on this question for either working out 10 – 3 (= 7) or one of the 'first step' methods in the mark scheme – a variety were seen on a regular basis. A good number then went onto complete their method accurately for 3 marks; some made one error, often omitting a length, gaining 2 marks. There were a small number of students who found the area rather than the perimeter; this gained no credit.

Question 8

Many students gained the correct answer of 110 for 3 marks. Some gave an answer of 1.1m which was allowed; 1.1 on its own was not and gained only 2 marks. Some students had an incorrect conversion e.g. 7m = 7000cm – the M mark could still be gained if followed by e.g. 7000 – 370 and this was seen regularly.

Question 9

Part (a) was answered well with almost all students giving 146 as their answer for B1. A small number negated the ×10 and gave an answer of 20. Part (b) was also answered well with most gaining 2 marks for an answer of 5; the most common incorrect answer seen was 11.

Question 10

Part (a) and (b) were answered well with most students able to give two correct probabilities. Some used incorrect notation such as ratio, whereas others used acceptable alternative notation such as percentages or decimals. Some students gave the numerators only as their answer. Part (b) saw more mixed results with many students scoring 0 marks. Common errors were to try to find 2/5 of either 10 or 30. Some were able to get as far as 16 for the total number of white counters now in the bag but could go no further. A small number managed to give a correct answer of 5.

Question 11

A good number of this cohort were able to gain the 1st and/or 2nd method marks. Around half of the students who gained M1M1 then failed to make any further progress as they divided 58.80 by 3.6 instead of 8.4. Of those who did manage to divide by 8.4, almost all went on to gain 4 marks for an answer of 7.

Question 12

In part (a) many students were able to correctly find the range and give an answer of 13. Incorrect answers seen were 1, 2.5 and 14. Part (b) saw less success as some students were not able to deal with there being an even number of values, giving 2 or 3 as an answer, although a good number did still gain B1 for 2.5. Part (c) saw mixed results with working out the total number of goals as 40 being the key to making a start on this question; of those that did, many were able to go on and gain 3 marks. Some students gained the value of x as 11 and proceeded to do a check by working out the mean with this value but then gave 5 on the answer line, losing 1 mark; students should ensure they place the correct value on the answer line.

Question 13

Part (a) saw around half of this cohort gain 3 marks for reaching the correct answer of 45. Some were able to work out the perimeter of the triangle as 28 or the length of rectangle as 9 but made no further progress. Some students attempted to work out the area of the triangle by doing $8 \times 12 \div 2$ and Pythagoras' Theorem was seen in attempts to calculate the perpendicular height of the triangle. In part (b) a good number were able to interpret the information correctly and reach a correct answer of 5.5. For those who did not know the volume of a cuboid

formula, no progress could be made; common incorrect methods included subtracting 6 and 7 from 231 or working out 231 × 6 × 7.

Question 14

Part (a) was answered very well with most students gaining 2 marks for a correct answer. Workings out are rarely seen for this type of question and it is advisable that students partially work out the calculation and write these values down in the workspace, otherwise if the answer is incorrect, no marks can be gained. Part (b) saw less success, with many rounding to 3 decimal places, common incorrect answers included 2.26 and 2.265.

Question 15

The full range of marks were regularly awarded on this question. The majority of students generally gained at least 2 marks for 2 or 3 correct regions, with the intersection and *B* only being most commonly completed correctly. The most problematic region was the outside, often seen left blank. Sometimes a single number was omitted; it is sensible to count how many figures have been entered after trying this kind of question.

Question 16

The first of the common questions with 1H saw varying degrees of success for this cohort. For those who were successful, several different methods were seen, some divided 12 by 3 and multiplied 8 by 4, some found A:S as 8:20 and went on from there, and some worked out the total number of goals to be 60 and progressed from that point. Some students managed to divide 12 by 3 but could not progress, and there were a good number who made no progress at all. There was a special case on the mark scheme for students who treated 12 as the total number of goals but this was seldom applied for this cohort.

Question 17

Some students were able to multiply the mid-interval values by the frequencies and add to gain 3 marks for an answer of 2160. There were many methods seen which did not gain a correct answer but still gained credit such as using a value consistent within the range e.g. the upper bound to find their products, doing further work with 2160 such as dividing by 30 to find the mean or a completely correct method with an arithmetic error. There were also plenty of methods seen which gained no credit such as summing the frequencies only or finding the mid-interval values and summing those.

Question 18

The full range of marks was awarded for this question. Some students were able to find the income for both sets of notebooks and go onto find the correct answer of 62.3. Some chose to work with profit instead, finding the profit for the two types of notebooks and progressing from there. Of those that did gain the first two method marks, many were unable to progress further, either ending their method there or providing an incorrect next step such as expenditure ÷ income × 100.

Question 19

In part (a) it was rare to see a fully correct answer. Students struggled to deal with the concept of working out the translation vector and therefore did not make any progress. Of those that did gain any credit, one mark was the most common score, usually for one correct value as they managed to find the change in the *x* or *y* direction. In part (b) students picked up marks for different aspects of the transformation but seeing a fully correct answer was uncommon, with the centre of enlargement being the aspect most often absent. It should be noted that the question asked for a single transformation so no other transformations should be described, for example scale

factor 3 along with the mention of a vector such as $\begin{pmatrix} 6 \\ 0 \end{pmatrix}$ or 'move right 6' contradicts this aspect and is B0.

Part (c) saw more success with a good number of students able to rotate the shape correctly and draw it in the correct position. Of those that didn't, drawing the shape with the correct orientation in the incorrect position and rotating the shape 90° anticlockwise correctly were often seen, both earning one mark.

Question 20

This Pythagoras question proved a step too far for many sitting this paper. It was rare to see a correct Pythagoras method to find the length of *AB*/*DC*. Of those that did, many could not go on to find the perimeter of the pentagon; the most common incorrect method was to find the perimeter of the rectangle e.g. 9 + 9 + 6 + 6.

Question 21

Most students were unable to gain a correct answer in part (a) but some did pick up B1 for 2 correct terms as part of a product; common errors were to have 2 or 6 instead of 8 or one incorrect power e.g. 7 instead of 12 or 10 instead of 21. Part (b) saw little success with the majority of students unable to give a correct answer of 5; some gave answers of 1, either because they know that $y^0 = 1$ but then failed to multiply by 5 or because they did not apply order of operations correctly. Part (c) was also a challenge with few students able to gain B2 for a fully correct factorisation. Some students were able to gain 1 mark for a correct partial factorisation with at least 2 factors taken out, usually 4*ab*, or for a correct factor taken out with one error, often a power 2 on the *a* in the bracket. In part (d) a small number of students were able to give a correct factorisation in (i) but this was rarely followed by the correct values in (ii). Some students gained 1 mark in (i) for a partially correct answer, usually the signs the wrong way round. It was common to see a fully incorrect answer, with expressions such as $x(x + 9) - 22$ often seen.

Question 22

It is clear that this cohort had not done much work on inequalities on graphs prior to this exam. It was rare to see any marks awarded as most students listed the coordinates of the vertices of region **R** or left the answer line blank. When algebra was given on the answer line, it was often the equations of the lines which could still gain M1 for $y = 2x + 4$.

Question 23

Part (a) was generally answered well with many students gaining 2 marks for a method and correct answer. The question asked for working to be shown so a correct answer without a method worth M1 gained 0 marks. The answer could be given with or without powers and both were seen on a regular basis. The most common methods seen were factor trees and in a table. Part (b) rarely saw 2 marks awarded but students often gained 1 mark, usually for writing 5*A* as 1800 or 7*B* as 3780 or for an answer of 1080 (finding the LCM of *A* and *B*).

Question 24

This question rarely saw marks awarded. Students needed to provide algebraic working to gain credit and this was rarely seen as students tried to work with the two equations as they are or used a numerical, trial and improvement, type method.

Summary

Based on their performance in this paper, students should:

- Check numerical answers to ensure they fit with the information given in the question.
- Ensure only one transformation is described when a single transformation is asked for.
- Practice linear inequalities on graphs, both drawing and interpreting regions.
- Learn how to find percentage change, including profit/loss.
- Practise rounding to significant figures, and know the difference between significant figures and decimal places.

Pearson Education Limited. Registered company number 872828
with its registered office at 80 Strand, London, WC2R 0RL, United Kingdom