Pearson

Examiner Report

Principal Examiner Feedback

January 2017

International GCSE Mathematics
A (4MA0) 1FR

edexcel

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

January 2017
Publications Code 4MA0_1FR_1701_ER

Principal Examiner's Report
International GCSE Mathematics A (4MA0)

Introduction to Paper 1FR

While many correct responses were seen throughout the paper, there were a significant number of blank responses to questions particularly towards the end of the paper. Of the early questions, the responses to questions 3 and 6 were particularly disappointing, clearly showing that many did not know the appropriate names for parts of the circle or metric conversions and time. While method was shown in some instances, it is still sadly lacking in many cases and students could improve their opportunity for the award of marks by clearly showing their working.

Report on Individual Questions

Question 1

This question was well done by the majority of students. Students must realise that when giving a fraction equivalent to $\frac{2}{7}$ as in (b) a decimal will not be accepted as part of the fraction; in this case we saw a number of responses that gave the answer $\frac{1}{3.5}$. Students should also ensure they read the question carefully as in part (c) when asked to give 65% as a decimal we saw answers of $\frac{65}{100}$.

Question 2

Some students had a problem with the term 'least' as in part (a) some gave the day with the most number of steps taken rather than the least.
When asked to write a given number in words, students should be reminded to write **all** digits as words.

Part (c) was well done with only occasional wrong answers seen, the most common of which was 5000, rounding to the nearest thousand rather than to the nearest hundred.

Part (d) was very well done, with the vast majority of students being able to pick out the numbers that were multiples of 5.

Part (e) was the most poorly done part of this question, with some misreading the number of steps from the table and some students dividing by 1000, perhaps not understanding what was meant by 'Give your answer to the nearest kilometre.'

It was pleasing to find the majority of students able to find the mean number of steps per day and even with an incorrect answer, usually gained from dividing by 7 before summing the steps, most students ended up with at least one mark.

.

Question 3

Students find the terminology linked to the circle difficult to remember and the words needed/used in this question were no exception. The most commonly known word associated with this question was radius, with chord the least well known.

Question 4

This was generally a well answered question, with a high number of students gaining full marks. Part (d) was the least well done part, and it is common for students at this level to leave 'give a reason for your answer' type questions blank. However it was pleasing to see a good number of correct responses and students either telling us that $\frac{1}{5}$ of Sril Lanka's population was 4 (million) and Singapore had a population of 5 (million) or that 5 (million) is $\frac{1}{5}$ of 25 (million).

Part (f), giving a ratio in simplest form was generally well done, with students often picking up full marks and if not, they benefitted from a mark for some simplifying.

Question 5

This question was generally well done, with slightly more students being able to find the cube of 7 than were able to find a prime number between 20 and 40. Some were able to give all prime numbers between 20 and 40, while the majority of students giving one value gave 23. With the use of a calculator the cube of 7 was almost always correct.

Question 6

Performance in both (a) and (b) was disappointing; conversion of metric units is a weakness.

When students write a time using the 12-hour clock, they must remember to put am or pm, as without this they will generally gain no marks.

Time elapsed is often done poorly, with many students thinking you can do a normal subtraction sum with no respect to there being 60 minutes in an hour. Adding on to the next hour and counting on after that was a method that tended to be used by those students giving the correct answer.

At this level, almost no students were able to change an area in m^2 into an area in cm^2 for part (f).

Question 7

This question was generally well done by the majority of students. One word of advice to students is not to give a probability as a ratio. A few did not understand what to do in part (c) to list all the combinations and gave us incorrect lists such as E1, F1, G1, W2, X2; clearly not understanding what a combination of one card from set 1 and one card from set 2 meant.

Question 8

The responses to this question were generally pleasing.
In part (a) a few students failed to see the $-p$ at the end and added the final p, inevitably giving the incorrect answer. Students must look very carefully.
For part (b), some students failed to simplify by giving an answer that still retained at least one multiplication sign. It must be noted that numbers in a product should be simplified to a single number and letters written next to each other.
For part (d) a few students gave the incorrect answer of -4, rather than 4.
In part (e) a few students used the substitution of c rather than a, but on the whole this part of the question was done well.

Question 9

Around half of the students were able to gain full marks on this question. Those that didn't were often able to do the first two parts very well. The most common mistake for those not doing so well was to misread the scales incorrectly, particularly on the horizontal axis where rather than realising a small square represented £0.20, they used one small square represented £0.10. Students must be careful with scales on all graph questions.

Question 10

On this calculator paper, many students were correctly able to find $\frac{2}{9}$ of 738, many students showing the correct calculation of $\frac{2}{9} \times 738$ which alone would gain M1.

For part (b), there were a good number of correct responses. Where students were not correct, they appeared to fail to read the question carefully. Responses included giving the fraction of horses brown rather than **not** brown or the number not brown rather than the fraction not brown. It was clear that some students are well rehearsed in working with fractions while others get the various techniques for the four rules of fractions mixed up. We saw some students trying to multiply the fractions or invert $\frac{1}{3}$ and then to subtract the numerators and denominators. There were also a good number of blank responses. Of those that gained full marks the most efficient method was not always seen – most use the method of multiplying the denominators and then multiply numerators by the opposite denominator.

Question 11

Most students were able to give the correct angle in (a)(i) but found giving the reason harder. Some students tell us the calculations that led to their answer which is not what is required. We need an explanation that includes the words 'angles', 'line' and '180'. Statements such as 'straight line = 180°' are therefore not sufficient.

For part (b), many students were able to correctly take the two given angles in the quadrilateral away from 360° but failed to divide by 2; these students picked up a method mark. Some thought that the angle found in part (a) had to also be taken from 360°.

Several students were able to find the number of sides of the regular polygon with exterior angles of 18° in part (c) although incorrect methods using 180 ÷ 18, 540 ÷ 18 and other spurious calculations as well as blank answer spaces were seen frequently.

Question 12

Students find it difficult to find the mid-point between two coordinates when they have not got a coordinate grid to work with. This question was no different, and the method of finding the gradient was more frequently sighted than the method to find the mid-point, although students then struggled to know what to give as coordinates. A few students tried to draw a diagram, but a lack of accuracy confused them. Some just took away coordinates and gave answers such as 4 – 8 = −4 and 11 – 3 = 8 and (−4, 8) or (4, 8) or (4, −8).

Question 13

We did see a good number of correct answers but unfortunately several students lost marks because they think that 13 hours 15 minutes is equivalent to 13.15 hours. If these students showed distance (8740) divided by 13.15 we awarded a method mark for knowing to divide distance by time to find average speed. A number of students changed the time to minutes and gained a method mark for this, however, they then divided distance by a time in minutes without also multiplying by 60 to give a speed in kilometres per minute rather than kilometres per hour; no more marks were awarded.

Question 14

It was encouraging to see some success with this multi-step question, which combined problem solving with sharing a quantity in given ratios and then using percentages and fractions of the amounts, and there were those who gained all 5 marks. Others were able to progress part way, but

failed to deal consistently with the number of beads taken out or remaining; such students usually scored 3 marks. Again, there was a significant amount of often convoluted working that made little sense mathematically; amongst this were attempts to divide the total amount of money by each separate ratio number or to find the percentage and/or fraction of the total amount of beads. There was evidence that some students did not read through the question carefully enough.

Question 15

Students on the whole made some very good attempts at this transformation question with part (b) done particularly well. For part (a) we were looking for a 'single' transformation so any addition of a transformation other than a reflection gained no marks; generally extra transformations involved students telling us to 'move' the shape down after a reflection in the *x*-axis. In part (b) if the student did not get the shape in the correct position, they often picked up a mark for rotating it 90° clockwise about (0, 0) or 90° anticlockwise about the wrong centre.

Question 16

For some students, drawing the straight line graph of $y + 2x = 6$ was a well-practised skill and they were rewarded with 4 marks. A handful gained 3 marks for a partially correct line or for plotting the points correctly but not joining them; the award of 2 marks or 1 mark was equally rare. The students who gained no marks for this question often plotted a few incorrect points often involving 2, 6, −2 and 4 (numbers taken from the equation and from the range of *x* values asked for in the question).

Question 17

We saw a good number of correct responses for part (a) but were surprised by the number of students who divided 224 by 9 because they saw the scale in the ratio of 1 : 8, so added the parts together and divided by that. Some students also misunderstood the question and multiplied by 8.

Part (b) had a mixed response. On the one hand students clearly knew what to do to find percentage increase but some students used the numbers in the question in haphazard ways to come up with a variety of incorrect answers. Several students understood they needed to find the increase in Asiatic lions and were able to benefit by gaining a method mark for this.

Question 18

It was pleasing to see the vast majority of students' gaining the mark for writing down the modal class correctly. Those who failed to gain the mark generally gave the frequency of the modal class or left the answer blank.

Part (b) was fairly well done, with almost as many students gaining 2 marks as all 3 marks and this was because they gave the mean weight of rugby players rather than the total weight. Students must be encouraged to read questions more carefully and even if a question looks similar to one they have done before they need to ensure they are giving the required answer. Students not gaining 2 or 3 marks could benefit from 1 mark by multiplying a number in the range by the frequencies – this was often the lower or upper value of the range. Many students who gained no marks multiplied the frequencies by 10, the class interval.

Question 19

The majority of students gained no marks for this question because they failed to realise the need to find the perpendicular height of the triangle by the use of Pythagoras' theorem (or other less efficient methods). For those students who did realise this the question became fairly straightforward. Stumbling blocks became remembering to square and subtract and to use the complete base for the area rather than half the base they had used in Pythagoras' theorem and a number of 58's were seen as answers (half the area).

Question 20

Students have generally got the message that they must show algebraic method when solving simultaneous equations as we saw very little trial and improvement going on. The most common and also most efficient way of solving the equations was to add them together and solve to find x first. A few multiplied to eliminate x first and some even used the slightly more complex method (in this case) of substitution. Some students got mixed up at the beginning by thinking the given equations should be subtracted and they gained no marks at all.
In part (b) expanding two brackets and simplifying the terms provided the opportunity for some to gain 2 marks. A further number showed some understanding and were able to give three or four correct terms; often it was the directed number aspect that caused errors.

Summary

Based on their performance in this paper, students should:

- learn all conversions between metric units;
- learn terminology to do with the circle;
- take care with very simple arithmetic and check answers;
- read questions very carefully ensuring you are giving the answer that is asked for;
- remember that a 'single' transformation means no more than one should be described;
- Learn conversions between time, e.g. 13 hours 15 minutes is 13.25 hours and also remember am or pm for 12-hour clock times;
- Read scales very carefully on any type of graph.

Grade Boundaries

Grade boundaries for this, and all other papers, can be found on the website on this link:

http://qualifications.pearson.com/en/support/support-topics/results-certification/grade-boundaries.html