Examiners' Report
Principal Examiner Feedback

January 2017

Pearson Edexcel International GCSE
Mathematics A (4MA0/1F) Paper 1F

https://xtremepape.rs/

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_1F_1701_ER
All the material in this publication is copyright
© Pearson Education Ltd 2017

https://xtremepape.rs/

Students who were well prepared for this paper were able to make a good attempt at all questions.

On the whole, working was shown and easy to follow through.

Despite this being a paper where the use of a calculator was allowed, a number of careless arithmetic errors were seen. It was notable that students were frequently reluctant to use their calculator to work out a percentage of a quantity, in this case 27% of 4600. Build up methods are certainly valid methods but, too frequently, incorrect values are given with no working so no marks can be awarded.

1 Part (a) was invariably correct but there were a surprising number of errors in part (b).

2 The type of number recognised correctly most frequently was a prime number in part (iii). Factor and multiple were frequently confused in parts (i) and (iv).

3 Parts (a), (b) and (c) were very well answered with few errors seen. Whilst many correct answers were seen in (d), a significant number of students either did not cancel the correct ratio sufficiently or failed to write down the correct ratio initially. Some students gained one mark for giving the ratio 2 : 3 rather than the correct 3 : 2 suggesting that they either failed to read the question properly or failed to realise the importance of the order given in the question. Some worked with fractions rather than ratios, an approach that gained no marks unless the final answer was a ratio.

4 Parts (a) and (b) were well answered. The most incorrect answer in part (c) was 90 with 80 seen occasionally. There were a surprising number of blank responses in part (d) suggesting that students did not know the meaning of the word ‘sum’. This was reinforced by the fact that a small minority found the product whilst a significant number of students found the difference rather than the sum.

5 Students should be reminded to read the question carefully; this question asked for the letter on the probability scale to be given each time and **not** the probability. The question was generally well answered; it was notable that there were fewer correct answers in (iii) than in the other two parts.

6 Part (a)(i) was invariably correct. Despite getting the correct answer in (a)(i) a minority of students were unable to give a correct explanation in (a)(ii). Whilst the majority of students gave the correct answer to part (b), some substituted correctly but then made an arithmetic error whilst others used the wrong operations.

7 Part (a) was well done. Whilst many correct answers were seen to part (b) there were a significant number of incorrect answers. A significant number of students assumed that triangle *ABD* was isosceles and so frequently in (c)(i) gave z as 49°. Whilst most of those that answered (c)(ii) attempted to give a reason, there are still many students who simply write out their working. An incorrect reason commonly seen was ‘angles on a straight line add up to 180°’.

https://xtremepape.rs/

8 Many correct responses were seen to part (a) but so were a number of incorrect responses – the common error was to draw in diagonal lines along with the correct lines of symmetry. There was slightly less success in part (b) with a number of students shading the 5 squares towards the bottom of the shape to form a rectangle. A surprising number of students failed at the first hurdle in part (c) by drawing a triangle or a pentagon rather than a quadrilateral. Of those that drew a quadrilateral the most common incorrect shapes were a rectangle and parallelogram.

9 The most common error in part (a) was to transpose 0.607 and 0.615. Whilst most students were able in part (b) to write down the correct fraction $\frac{24}{80}$, some were unable to cancel it correctly. The sight of $3\frac{1}{3}$ as an answer suggested that some entered $80 \div 24$ rather than $24 \div 80$ into their calculator. In part (c) the most common incorrect answer was 0.9 which was seen numerous times. It was rare to see an incorrect answer in part (d). In part (e) some tried to write $\frac{2}{9}$ as a decimal as a first step. This frequently led to no marks as the decimal used was 0.2; partial credit was given if the decimal was correct to 2 or more significant figures and then used correctly. Students would be well advised to practise working with fractions rather than first attempting a conversion to a decimal. 83.43 was an occasionally seen incorrect answer from those who divided rather than multiplied by $\frac{2}{9}$ In (f) a significant number of students attempted to use a build up method to work out 27% of 4600 – this was rarely successful. Students would be well advised to learn to use their calculator to work out a percentage of a quantity. A significant number of students gave the answer of 1242 and therefore gained only the first method mark. Further advice would therefore be to read the question carefully.

10 The incorrect answer of -26 was seen very frequently; this arose when students used their calculators and so evaluated $-2 - 8 \times 3$ rather than the correct $(-2 - 8) \times 3$. There was evidence that students who arrived at the correct answer did a two stage calculation: $-2 - 8 = -10$ and $-10 \times 3 = -30$
In part (b) a common incorrect answer was 0 from those who used the correct inverse operation of $\div 3$ but then subtracted rather than added 8 so forgetting to use the inverse of the second operation as well as the first. Provided working was seen, a method mark could be awarded. Another incorrect answer was 48 from those who used 24 as the input rather than the output.

11 Construction questions are often poorly done by students at this tier but constructing an isosceles triangle using ruler and compasses produced a high number of accurate responses for both marks. Many other students were able to achieve one mark for the correct triangle without the construction arcs shown or for using the correct construction to draw a triangle with at least one side of the required 5cm length.

https://xtremepape.rs/

12 The majority of answers were correct in part (a); occasionally there were either repeated combinations or some missing combinations. Most chose to write their answers out in full but abbreviations such as TP were perfectly acceptable. It was disappointing to see so many arithmetic errors in part (b); these occurred frequently, but not only, when repeated addition rather than multiplication was used. The straightforward problem in part (b) of working out the cost of some burgers and pizzas, and subtracting this amount from £20 to find out how much change should be received, was successfully done by almost all students to gain 3 marks. Occasional numerical errors occurred but this usually resulted in the award of 2 marks for the method.

13 In part (a) it was, as ever, the signs that caused problems for students with $7x + 3y$, $7x + 17y$ and $11x + 3y$ being common incorrect answers. The most common incorrect answer in part (b) was $24t$. In part (c) $7h^3$ was the most frequently incorrect answer seen although $8h^2$ was also seen relatively often.

14 Virtually all students felt able to have an attempt at this question, which asked them to find the area of a shaded rectangle which was part of a larger square and many gained the full 4 marks. Given that the length of the side of the square was 10cm and that one part of the length was 3cm enabled a high number of students to gain one mark for giving 7cm as the unknown length; too many went on, wrongly, to use this length for each side of the shaded rectangle. Finding the unknown side of a rectangle with an area of 12 cm^2 and one side of 3cm proved a little more problematical. Some made the wrong assumption the sides *AD* and *BC* had been split in half and so used the length of both *EJ* and *BF* as 5 cm. A noticeable number of students worked with perimeter rather than area.

15 In part (a) the square root, rather than the cube root, of 64 (8) was frequently given as an incorrect answer. In part (b) 8^8 was a very common incorrect answer. Expressing 600 as a product of powers of its prime factors in part (c) gave many the opportunity to score 3 marks for a fully correct response or 2 marks for expressing it as a product of its prime factors, failing to recognise the significance of ‘powers’. Other students were able to make a correct start in repeated factorisation for one mark before errors in the process became evident. The question clearly required working to be shown; there were students who presented a correct solution on the answer line but with no working; this gained them no marks.

16 A wide range of answers appeared for the three integers with a mean of 7, a median of 5 and a range of 14, including a good number of correct responses. Equally often, one of the two marks was gained for three numbers with a total of 21 or a median of 5 or a range of 14. Often students indicated by notes they wrote that, given some numbers, they knew how to find the mean, the median and the range but were unable to apply that knowledge to the question set.

17 This question asked students to find the total length of wire required to make a design that had a 70 cm square, a circle with diameter 40 cm and four 15 cm lengths. Fully correct answers were seen but less often than expected. Many could get as far as 60 cm for the four lengths and some also as far as 280 cm for the perimeter of the square, both of which were needed for one of the method

https://xtremepape.rs/

marks. A frequently seen error was to include only one side of the square or to calculate its area. It was also noticeable how disappointingly few students worked out the circumference of the circle; they either calculated the area or simply used the diameter (or twice the diameter) for the length of wire required. The award of a mark for the addition of the necessary lengths needed the correct methods from the preceding stages to be shown.

18 Students clearly recognise the method for sharing a total amount in given ratios but many seem to apply it regardless of the context of particular ratio questions. In this question, students were given the ratios and told how much one person received but this was often taken as the total to be shared, with subsequent working unable to gain any marks. Working that followed no logical pathway was also regularly seen. Nevertheless, a good number of students were able to gain full marks since they had read the question carefully.

19 Subtraction of one mixed number from another was better attempted than is sometimes the case and clear working was shown leading to a correct conclusion by a pleasing number of students. At the opposite end, there were responses with ambiguous, muddled and nonsensical working, with a few who mistakenly tried to work in decimals. Where the full three marks could not be achieved, one or two marks were often given for correct improper fractions and for fractions with common denominators.

20 4 marks were available in part (a) for drawing the graph of $y = -2x + 4$ for a given range of x values and an encouraging number of students gained full marks. A mark could be lost for an incomplete line or for all the necessary points plotted but not joined. Working out and plotting some points benefitted students with one or two marks. A significant number of students were unable to access this question and there were responses with seemingly random points plotted, lines with a positive gradient and non-responses. In part (b), the line $y = -2x +4$ formed part of a region that was described using inequalities, the other boundaries being $y = -4$ and $x = 1$. Some understanding was shown by responses that used these lines as part of a shaded rectangle but the two required lines had to be unambiguously identifiable for the award of marks. Again, a pleasing number at this tier were able to show the correct region but non-responses, assorted rectangles and random shapes were again much in evidence.

21 Having got as far as $5y = -7$ in part (a) many then failed to give the correct answer with 1.4 a common incorrect answer. The need to show clear algebraic working when asked to solve an equation is increasingly being recognised by students and fewer numerical-only attempts were seen in part (b). Indeed, a high number of full mark answers was seen. Where this was not the case, many gained at least one mark for correctly expanding the brackets. From this point, the most frequent errors were related to the directed number aspect of the equation, in particular with students unable to deal correctly with the $-q$ term. Whilst a few students in part (c) did get as far as -4 it was rare to see this given with the correct inequality i.e. $t \leq -4$. Those who employed an algebraic method frequently failed at the outset by 'losing' the negative sign with $7t \geq 28$ rather than the correct $-7t \geq 28$ given as the first line of working.

https://xtremepape.rs/

22 In part (a), given a speed and a time, students were asked to work out a distance; many responses showed some very muddled understanding of the relationship between these variables. This was compounded by students' uncertainty as to how to deal with 7 hours 18 minutes. While the correct method and answer were regularly seen, multiplication by 7.18 (which could gain one mark), multiplication by 438 minutes (which could only gain the mark if division by 60 also appeared, which was rare) and division were seen equally often. There were also varied attempts to try to work with the hours and minutes separately, for example multiplying the 750 by 7 and then adding on 18.

In part (b), changing from kilometres per hour to metres per second, was very poorly done. Even the basic conversion of kilometres to metres, where it was actually attempted, produced answers from multiplication by 100 or by 10 and from division by various powers of 10. Division by 60 was sometimes seen in the working but often only once for conversion to minutes without continuing to the conversion to seconds. A number of students benefitted from the award of a mark for showing one correct conversion and some were able to give a completely correct method and answer.

23 Writing down the modal class in part (a) was correctly answered by the vast majority of students, with the most common error being to give the frequency linked to the modal class.

Part (b) produced the usual range of responses. There were fully correct answers from summing the products where the correct midpoints had been used, and then division of this total by 100. A common error was to use a value within the class interval that was not the midpoint; if division by 100 followed this gained 2 marks. For both correct and incorrect sums, division by 5 was seen at least as often as the correct division. Summing the midpoints or the end points of the class interval was frequently shown, as was the sum of the frequencies, usually with division by 5 following.

Summary

Based on their performance in this paper, students should:

- learn mathematical vocabulary, for example factor, multiple, sum
- understand the difference between a ratio and a fraction and be able to write down both from given information
- practise converting time to a decimal
- practise working out a percentage of a quantity using a calculator
- read the question carefully and review their answer to ensure that the question set is the one that has been answered
- learn metric unit conversions.

https://xtremepape.rs/

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

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

https://xtremepape.rs/