edexcel

Examiners' Report/ Principal Examiner Feedback

January 2012

International GCSE Mathematics A (4MA0) Paper 1F

Edexcel and BTEC Qualifications
Edexcel and BTEC qualifications come from Pearson, the world's leading learning company. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers. For further information, please call our GCE line on 0844 576 0025, our GCSE team on 0844 576 0027, or visit our qualifications website at www.edexcel.com. For information about our BTEC qualifications, please call 0844 576 0026, or visit our website at www.btec.co.uk.

If you have any subject specific questions about this specification that require the help of a subject specialist, you may find our Ask The Expert email service helpful.
Ask The Expert can be accessed online at the following link:

http://www.edexcel.com/Aboutus/contact-us/

Pearson: helping people progress, everywhere
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 raising achievement through innovation in education. Find out more about how we can help you and your students at: www.pearson.com/uk

January 2012
Publications Code UG030739

International GCSE Mathematics A
Specification 4MA0
Paper 1F

General Introduction to 4MA0

January 2012 hosted for the first time, the winter session of the International GCSE Mathematics A. All previous sessions had taken place in November. The total number of candidates rose to slightly over 2550, the highest entry for a winter session. Foundation entries, which had been decreasing, recovered to nearly 450 (from 300 in November 2010). Candidate entries for the higher tier were just over 2100.

Most of the 480 Foundation tier and 2200 Higher tier candidates took the opportunity the papers gave them to show what they knew.

Paper 1F

Introduction

In general, candidates found the majority of this paper accessible. Questions that required basic number skills were well answered, whereas those requiring algebraic manipulation or remembering terms and/or definitions produced a more mixed response.

Questions which did not score well included Q15, a construction of a rhombus, evidenced by a sizeable number of candidates starting the exam without a pair of compasses to hand. Elsewhere Q14 caused many Foundation and Higher candidates to struggle, by including two sectors marked as red rather than one. The orientation of the triangle in Q20 led many to select tangent rather than sine to calculate the required angle.

The paper provided a good balance of questions which gave all candidates a fair opportunity to demonstrate their abilities.

Report on individual questions

Question 1

Mistakes were rare on this opening question. In part (c) in a minority of cases, some candidates opted to estimate 60% by shading just over a half of the shape, using part squares, rather than shading 3 full squares as anticipated. In such cases a judgement was required on behalf of the marker and full marks may have been awarded.

Question 2

All components of part (a) were well answered. Part (b)(ii) was poorly done. Despite correctly identifying the 3 cards that Ben should choose in part (b)(i) many candidates reverted back to the original 4 cards in selecting those 3 which should make the largest possible odd number. Responses which included the card 7 were therefore common.

Question 3

There was a pleasing response in part (a) with many candidates correctly identifying that the sum of the angles should come to 360°. In a small minority of cases some candidates insisted that either the orientation was wrong or that *x* should be bigger than *y*. In part (b) a variety of misspellings was accepted if, when verbally pronounced, they were close to the correct answer.

Question 4

Common misconceptions were that Q4(a)(i) was a prism, (or triangular prism) and Q4(a)(ii) was a hexagon. Both these responses scored no marks.

Question 5

The components referring to the pictogram all scored well. In Q5(c)(ii) partial simplification to 6/50 or no simplification 12/100, was rare and scored half marks. In part (d) no credit was given for fractions.

Question 6

Some candidates lost the one mark available in part (a) through miscounting the number of crosses, or drawing a shape that had lost its symmetry. In part (c) occasionally 109 (from $3 \times 37 - 2$) was seen as an incorrect answer. Part (d) proved to be a good discriminator question with sufficient flexibility in the mark scheme to award partial marks. Breaches of the conventions of algebra, e.g. letters before numbers, including times signs etc were overlooked so that responses such as N=P3 – 2, N=P×3 – 2, etc were awarded full marks.

Question 7

In part (a) – 21 was treated as + 21 and gained both marks on offer. A common incorrect answer was – 15 (from – 18 + 3). In part (b) + 7 as an answer with no working scored no marks and occasionally 29 (from 11 – -18) was seen. Although both parts scored well, part (b) was attempted better than part (a).

The most common mistake in the last part of the question was to omit, deliberately or otherwise, the 10 minutes before the item was placed in the oven. Therefore 16.10 or 4.10 were common answers and scored no marks unless some working was seen which the mark scheme could give credit for. Correct answers in 24 hour or pm notation were accepted.

Question 8

Part (iii) was the most successful component of a generally well answered question. A surprising number of candidates thought that a day of the week ending in the letter *y* was unlikely or impossible and also that it was very likely that a person picked at random would have a birthday in June.

Question 9

In part (a) interpretation of scale, as evidenced by answers such as 3.6, 0.36, 360, rather than inaccurate measuring, was the cause of most lost marks.

The algebra component of latter part of this question, of stating the correct equation of a horizontal line, was not particularly well done with a success rate of around 50%. Common wrong answers were $x = 1$, $AB = 1$, $AB = y$, $y = x$. In part (d) many responses scored no marks by reflecting the trapezium in the x axis or moving P or Q onto the line AB. The mark scheme made it unlikely that only 1 of the 2 marks would be ever awarded.

Question 10

Apart from misunderstanding what a prime number was, the first 3 components scored well. In part (d) common mistakes were to find $\sqrt{41}$ which led to a more difficult rounding process or in rare cases $(\sqrt{41})^3$.

Question 11

Anticipated accuracy issues of measuring angles built into the mark scheme failed to materialise and those with protractors usually obtained 60° and 40° to give a scale factor of 1.5. It could be interpreted that this was the most challenging question so far on the paper but both parts were well answered, with a commendable success rate.

Question 12

The majority of components were answered well. Parts (a)(ii) and (d)(ii) were the most challenging elements. In the former many failed to recognise they were adding 4 like terms and were unsure how to treat the indices. Answers of $4p^{12}$ or p^{12} were therefore common. In (d)(ii) either the brackets were multiplied out incorrectly (e.g. $3y^2$ instead of y^3 and/or $10y$ instead of $10y^2$) or subsequent incorrect simplification took place on what was an originally correct answer. Therefore $y^3 + 10\ y^2$ became $10y^5$ or $10y^6$. In this latter case 1 mark was deducted from the 2 that would have been awarded.

Question 13

Although mistakes were much more prevalent from Foundation candidates than those attempting the same question on the Higher paper, generally responses were well done, particularly in part (a). Here the most common mistake was to attempt to work out 7% of 32 and then sometimes go on to multiply this by 10 to get a more reasonable size answer, leading to 22.4 instead of the 21.9 required. An answer of 22% with no working therefore gained no credit.

In part (b) it was to be hoped that by putting "million" on the answer line it would encourage candidates to work in millions rather than become embroiled in trailing zeros associated with large numbers. Foundation candidates who ignored this prompt sometimes lost track of how many zeros were involved. Candidates who wrote 33,000,000 or 33,300,000 or 33280,000 on the answer line gained full credit.

Question 14

As mentioned in the preamble many candidates latched on too quickly that because the spinner had 5 sections each colour had a probability of a 1 in 5 chance of occurring. Answers of 6 (from 1/5 × 30) were almost as common as the required answer of 12.

Question 15

This was the least successful question on the paper and beyond the abilities of most Foundation candidates in this cohort. Awarding full marks was rare but not unknown. For those who could produce an accurate rhombus without construction lines a special case of 1 mark was awarded.

Question 16

Candidates generally coped well with the idea that the set theory symbol in part (a)(i) represented the empty set and hence there were no candidates who studied both German and Maths. Marks were withheld if they went on to add erroneous information such as "*they didn't study Maths but did study French*". This rule also applied in part (a)(ii)... "*Preety doesn't study French but she does study Maths/German*". A sizeable number of responses mentioned that Preety did in fact study French, possibly because they did not examine the negation symbol closely enough.

Although Venn diagrams do not form part of the Foundation specification many used this visual device to reach the correct result in part (b).

Question 17

At Foundation level there were frequent misunderstandings about rounding to 3 significant figures but these were not penalised provided a more accurate answer was found in the body of the script. Most recognised the need to divide the 15 by 2 to use a radius of 7.5 in the volume formula. Those who did not picked up 1 mark out of 3 for using the value of 15.

Question 18

Because of the tariff (3 marks) and the level (Grade C) an algebraic start was required in order to award marks. The answer of – 10 was sufficiently obscure to dissuade candidates from guessing or spotting the answer correctly with no working which would have led to no marks awarded. In fact there was not one instance where a candidate was successful with this approach. Correct answers were awarded full marks if one method mark had been obtained. This was given for multiplying out the brackets correctly ($3x - 12$) as a first stage. Many candidates fell short of obtaining the second mark by failing to reduce the equation down to a two term statement equivalent to $-20 = 2x$.

Question 19

In part (b) answers of 8 for the number of texts sent, for those candidates who were troubled by the decimal value as a final answer, were accepted for full marks provided 3 method marks had been awarded prior. The table gave a clear structure on how to proceed and most candidates followed this lead. One arithmetic error was condoned for those candidates unable to choose and use the correct mid-interval values.

Question 20

The orientation of the triangle led some candidiates to incorrectly select tangent for the trigonometric function to be used, instead of sine, and hence they scored no marks. In part (b) 5.84 was mistakenly selected more times than 5.85 as the upper bound whilst 5.75 had more success as the lower bound.

Further copies of this publication are available from
Edexcel Publications, Adamsway, Mansfield, Notts, NG18 4FN

Telephone 01623 467467
Fax 01623 450481
Email publication.orders@edexcel.com

Order Code UG030739 January 2012

For more information on Edexcel qualifications, please visit
www.edexcel.com/quals

Ofqual

Llywodraeth Cynulliad Cymru
Welsh Assembly Government

Rewarding Learning