edexcel

Principal Examiner Feedback

June 2011

GCSE Mathematics (2MB01)

Unit 2: 5MB2F_01
Foundation (Non-Calculator)

Edexcel is one of the leading examining and awarding bodies in the UK and throughout the world. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers.

Through a network of UK and overseas offices, Edexcel's centres receive the support they need to help them deliver their education and training programmes to learners.

For further information, please call our GCE line on 0844 576 0025, our GCSE team on 0844 576 0027, or visit our website at www.edexcel.com.

If you have any subject specific questions about the content of this Examiners' Report 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/

June 2011
Publications Code UG028424

1. PRINCIPAL EXAMINER'S REPORT – FOUNDATION PAPER 2

1.1. GENERAL COMMENTS

1.1.1. This paper included a number of questions set in context which required candidates to plan a strategy and then set out working in a logical fashion. Often candidates did not fully interpret the context and so selected inappropriate mathematics to solve the problem. Most notable was Q15 where the vast majority of candidates did not realise that covering a floor with floorboards would involve calculation of area and instead considered perimeter.

1.1.2. Candidates need to be encouraged to present their working clearly in part to enable them to check it themselves. Answers need to be checked for their reasonableness particularly when dealing with real-life situations.

1.1.3. Centres should encourage students to use their time effectively, not rush through questions and take care to check their work. Careful initial reading will ensure that crucial details such as axis scales and units are not missed.

1.1.4. Where candidates did not bring the appropriate equipment they inevitably lost valuable marks due to lack of accuracy for example in Q5 where they had to draw a circle.

1.2. REPORT ON INDIVIDUAL QUESTIONS

1.2.1. Question 1

Both parts of this question were successfully answered over 90% of candidates. Where errors occurred they were generally through omission of one integer, confusion with the relative size of the negative integers or ranking largest rather than smallest first.

1.2.2. Question 2

Part (a) was successfully answered by over 90% of candidates.

In part (b) most clock 'hands' were correctly placed between the 2 and 3 and on the 6. Those whose hour hand pointed exactly to the 2 were still able to gain the marks. The most common error was to draw the minute hand shorter than the hour hand showing ten past six rather than half past two. The use of a two hands with identical length was condoned but this is an example where speed answering a question may have lost a candidate marks through lack of attention to detail.

Many candidates gained full marks for part (c). A common error was to convert times to decimals, effectively using 100 minute hours, then carry out the subtraction 4.20 - 3.30 giving 0.90, usually written on the answer line as 90 minutes. Incorrect subtraction when times were set out

in column format often led to 1.10, 1 hour 10 minutes and 70 minutes. Candidates who used a time line usually found the correct answer.

1.2.3. Question 3

Part (a)(i), finding the difference between -4 and -6 was successfully answered by over 90% of candidates.

In part (a)(ii), some candidates gave -1 as the difference between -6 and 5 although over 70% gave the correct answer.

Part (b) caused more difficulties with 5 commonly given as the result of dropping 11°C from 6°C. Candidates could be encouraged to draw number lines – particularly given the temperature context of this question. Those who did usually produced accurate answers.

1.2.4. Question 4

Part (a) was successfully answered by about 80% of candidates. Others generally involved indices in their answers with not only d^4 commonly seen but also 4^d. Candidates could be reminded of the need for clear writing in their answers so that $4d$ never looks more like 4^d.

In part (b) the negative sign associated with the $2f$ term caused difficulties. Some candidates ignored it and added $2f$ to $3f$ instead. Others linked it with the preceding 4 instead and often gave $f - 10$ as their final answer. It may be helpful to encourage students to circle or underline each like term together with its preceding sign. Many candidates who gave the correct expression $f + 10$ in their working spoilt their final answer by further incorrect simplification to $11f$.

1.2.5. Question 5

It was clear that many candidates had no pair of compasses available and so had to resort to drawing a freehand circle by joining points plotted at 5cm from the centre cross. Some improvised using a protractor as a semi-circle template and gained just one of the 2 marks as their resulting circle was inevitably stretched. Other candidates who drew accurate circles lost a mark due to use of an incorrect radius and 5cm used as the diameter instead was sometimes seen.

1.2.6. Question 6

A significant number of candidates identified both pairs of parallel lines in part (a) but used the same symbols for all four lines. A few placed arrows alongside the lines and others used unconventional notation such as repeating arrows all the way along a side of the shape.

Errors in answering part (b) came from marking A at the obtuse angle or one of the right angles. Some candidates marked A at the correct vertex but outside the shape and without an arrow clearly indicating the inside angle.

1.2.7. Question 7

Most errors seen were with adding 38's or with subtracting 38's from 120 incorrectly. Errors were also made in counting how many 38's had been added together or subtracted from 120.

An incorrect addition / subtraction often gained a method mark but accuracy marks were lost either for the incorrect number of tickets or for money left over. Doubling 38, 76, 152 was often seen without an attempt to reduce by 38 to give 114. Candidates could be encouraged to consider estimation as a starting point for this type of question. Here it was very appropriate to round 38 to 40 to establish that 3 tickets could be purchased.

1.2.8. Question 8

Part (a), selecting an odd number, was successfully answered by over 92% of candidates.

In parts (b) and (c) the success rates fell to just over 80% and 75% due to confusion between factors and multiples.

1.2.9. Question 9

About 50% of candidates gave 0.25 as the decimal equivalent to 1/4 in part (a). Incorrect answers included 1.4 and 0.4.

Part (b) was the least successfully answered part to this question with the success rate falling to about 40%. Many candidates wrote 0.8 as 8%.

Nearly 60% correctly simplified the ratio 2:6 in part (c). Where candidates attempted this question, errors often involved attempts to find equivalent fractions.

1.2.10. Question 10

In part (a), many candidates recognised the angle on a straight line as 180° but the failed to complete the calculation correctly. Many added the 2 angles but then made errors subtracting from 180.Candidates could be encouraged to complete a final check of their answer by adding it to the 2 given angles to make sure the correct total 180 is reached.

In part (b), the most common error was the omission of the right angle from the calculation. Of those who did add everything correctly and knew the angle sum of a quadrilateral, many were unable to subtract 252 from 360. The method mark was often lost because candidates failed to write down clear calculations.

1.2.11. Question 11

About a third of candidates scored full marks for completing the invoice correctly and another third made just one error. Calculation of the labour charge caused most difficulties with some leaving it as £18 for 1 hour or doubling to £36 rather than finding the correct cost for 1½ hours. Many students took advantage of the space given below the question to do their working and when their 4 figures were set out in columns to do the final addition they stood a better chance of gaining a follow through mark even if there were other inaccuracies.

1.2.12. Question 12

Candidates tackled this functional question either by calculating the number of border rolls required for the total perimeter or by considering the number of rolls needed for each separate side length. Where the total perimeter was found, successful candidates often showed multiples of 4 up to 28. Those who carried out a division often failed to consider the context and round up to 7 rolls but instead gave 6 as their final answer.

Many candidates marked off lengths of 4m around the walls on the diagram or listed the side lengths and the rolls required for each, often combining side lengths in attempts to make up multiples of 4m. Where labelling and working was organised, these candidates were often successful but sometimes confused markings or working led to inaccuracies. For example often 2 rolls were allowed for a 5m side without allocation of the spare 3m to another wall.

1.2.13. Question 13

Success rates for the 3 parts of this question were similar with around 40% correctly answering each. In parts (a) and (c) candidates often wrote down the correct calculation 7 × 7 or 2 × 2 ×2 but then did not evaluate it or made an arithmetic error, typically showing 7 × 7 = 48. Candidates misunderstanding indices inevitably gave 14 for 7^2 and 6 or occasionally 9 for 2^3.

Common wrong answers for part (b) were 12.5, 2.5, 5 × 5 and 25 × 25 with or without an attempted evaluation.

1.2.14. Question 14

98% of candidates scored at least 1 mark on part (a) with nearly 90% scoring both available with an explanation of how the next term could be found. In order to score the second mark it was important for candidates to not only mention the term to term difference of 3 but also note that the sequence was increasing and so 3 needed to be added. Some candidates gave the correct nth term rule 3n + 1 instead.

75% of candidates gave the correct 8^{th} term of the sequence in part (b). The most common errors involved giving the 9^{th} term 28 or 24 from 8 × 3. 50% of candidates gave a correct explanation in part (c) with incorrect answers referring only to multiples of 3 or the alternating odd and even terms of the sequence.

1.2.15. Question 15

Candidate's work on this functional question was disappointing with just over half scoring no marks and about 30% scoring just 1 mark. Most students did not relate the context of floor covering to the need for an area calculation. Instead, the vast majority used perimeter instead, often missing out the 2 unlabelled sides. Many realised the need to divide by 2.5 and thus gained a method mark usually from repeated addition. A common error when dividing by 2.5 was to use division by 5 but then omit to double the answer. Where area was used, the most successful candidates showed clearly on the diagram how they divided the compound shape into rectangles. They then set out the well-structured working and a clear conclusion of 8 packs which was essential in this starred question with a focus on Quality of Written Communication.

1.2.16. Question 16

50% of candidates were unable to score marks on this question but where the others did make progress they usually attempted to list times for the two coaches. Arithmetic errors were common with multiples of 16 for the Plymouth coach and such errors meant that lists did not conicide at 9:20 and they went on further. Some omitted to identify 9.20 as the next common time although it was seen in both timetables. Use of the lowest common multiple of 16 and 20 was less common and caused some difficulties changing the 80 minute interval back to an actual coach time.

1.2.17. Question 17

Less than 15% of candidates gained full marks on this question. Errors included incorrect order of operations evaluating $(2 \times 4)^2$, incorrect substitution followed by attempts at 24^2 and multiplication of 4 by 2 rather than squaring. Unfortunately, some candidates who dealt with the x^2 term correctly went on to lose a mark for incorrectly adding 32 and 7 with 41 often seen.

1.2.18. Question 18

Many students did not attempt this question, possibly due to the lack of a table for completion. The fifth of candidates who did score full marks usually did so by setting up their own table first as the scales on the axes made it difficult to use a intercept-gradient method. A few students plotted the correct points but did not draw the line and others had a line which did not extend from $x = -1$ to $x = 3$ as required.

1.2.19. Question 19

The majority of the few candidates who made any progress with this question did so by relating comparable time periods showing 48(mph) or 56/2(km in half an hour). Very few students noticed that miles were used on Monday and km on Tuesday and those that did realise did not know the correct conversion factor.

1.3 GRADE BOUNDARIES

Grade boundaries for this, and all other papers, can be found on the website on this link:
http://www.edexcel.com/iwantto/Pages/grade-boundaries.aspx

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 UG028424 June 2011

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

Ofqual

Llywodraeth Cynulliad Cymru
Welsh Assembly Government

Rewarding Learning