



General Certificate of Secondary Education

Mathematics (Modular) 4307 *Specification B*

Module 3 Foundation Tier 43053F

Report on the Examination *2008 examination - March series*

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General

The paper proved to be accessible to candidates with no evidence of a lack of available time to complete all the questions. It was good to see a general improvement in some areas such as the arithmetic parts of section B. However, few candidates could write nine-tenths or one thousandth as a decimal.

Topics that were well done included:

- calculator work
- division in context
- factors and multiples
- multistep money question
- working with negative numbers.

Topics which candidates found difficult included:

- rounding to two decimal places
- percentage increase
- upper bound for discrete data
- writing fractions in words as decimals
- dividing a fraction by an integer
- estimation.

Question 1

This provided a good start to the paper for many candidates with, on part (a), only the cube number and to a lesser extent the even square number causing any real difficulty. In part (b) the majority of candidates chose the correct numbers and successfully multiplied. The main errors came from adding the two numbers or incorrectly using non-calculator methods of multiplication (sometimes simply multiplying 3 with 4 and 6 with 8). A few candidates did not evaluate 36×48 or chose two other numbers from the list or multiplied 48 with itself.

Question 2

Parts (a) and (b) were on the whole well answered and few candidates appeared totally unfamiliar with a mileage chart. In part (c) a significant number of candidates decided to use 7 days rather than 5, whilst others used the incorrect mileage.

Question 3

There were many successful attempts at this question. Most of the errors came from slips in the addition of the prices for single tickets. A few who set out this sum in a column had difficulties because £8 was written in the pence column rather than the pounds column leading to an answer of £25.16 for the single tickets.

Question 4

Parts (a) and (c)(i) were well answered. The cube of 8 was well done. Many candidates chose either to truncate their answer to part (i) or to move the decimal point two places along the number one way or the other. Some inserted a second decimal point, for example 15.28.81, whilst others rounded to one decimal place. A few “rounded” both the 2 and the 8, to give 15.39. Correct rounding was rarely seen.

Question 5

For part (a) a large number of candidates did not know how many days are in April. The inclusion of the beginning and end dates was the cause of many errors, but those who listed all the dates and counted were usually successful. A few candidates simply subtracted 9 from 26 or added these figures. In part (b) the main difficulty was coping with the distance travelled in the 15 minutes. Many candidates tried to evaluate this by doing $36 \div 15$ or simply by adding 15 to the distance travelled in 4 hours. Some divided 36 by 3 instead of 4 and a few candidates ignored the quarter hour altogether. Others treated the time decimally as 4.15 instead of 4.25. Some turned the time to 225 minutes and then multiplied by 36, thus mixing the units. Only a few candidates divided instead of multiplying the speed and time. Those candidates who calculated 36×4.25 directly or realised that $36 \div 4$ was needed for the 15 minutes were usually successful.

Question 6

There were some good attempts at this question employing a variety of methods. The most common was to attempt to convert both 35000 ft and $6\frac{1}{2}$ miles to metres and compare the values. The main difficulty for candidates was deciding whether to multiply or divide by 0.3 and 1600.

Question 7

Attempts were fairly equally divided between two main methods, one finding Adam's mark as a percentage and the other finding Ben's mark out of 40. Most candidates attempted some calculation although a few simply gave vague reasons and some seemed to think that if Adam scored 24 then Ben must have scored the remainder. Despite the clear instruction that working had to be shown a minority of candidates simply stated Ben. Others gave some suitable calculations but then failed to answer the question of who actually did better.

Question 8

This question was not well answered. Some simply subtracted 3.2 from 68000. Many others divided by 3.2 while some thought that 3.2% was the same as 0.32. Build-up methods to find 3.2% inevitably ended in failure. Those who multiplied by 0.032 were usually successful although some did not go on to subtract their answer from 68000 or added it on instead. Candidates were more successful with the lower bound than the upper bound in part (b).

Question 9

Disappointingly, few candidates could write the decimals in parts (b) and (c) correctly. There were numerous answers such as 9.10 for nine-tenths and 0.1000 for one thousandth. Parts (a) and (d) were well answered.

Question 10

Both parts of this question were well answered with the context helping candidates understand the requirements. In part (b), some candidates attempted a division and many chose to write down the multiples of 11. Most then went on to give the answer 7, but sometimes 6 or 8 were seen on the answer line. Occasionally when $7 \times 11 = 77$ was written down, 11 was selected. A few candidates simply subtracted 11 from 75 but on the whole many answers were fully correct.

Question 11

This question was well answered with the exception of the last part with the expected error of -3 very common. The wording in the parts (a) to (e) did not seem to cause any difficulties for candidates and the sight of -4 for part (e) was less frequent than possibly was expected.

Question 12

Part (a)(i) was well done but in part (ii) answers of 1, 1.5, 2, 5.1, 5, 6, 10, 15 and 25% were commonly seen even when the candidate had correctly answered $\frac{1}{5}$ in part (i). A few candidates gave a decimal version of their part (i) answer instead of a percentage. Many candidates attempted part (b) by finding 10% and then 5%. Those who stated these values as 0.8 and 0.4 sometimes had difficulty adding these two figures, so that 0.12 was given as the sum. Some candidates went on to add their answer to 8. Other methods such as the correct $\frac{15}{100} \times 8$ and incorrect $\frac{8}{15}$ (or $\frac{15}{8}$) $\times 100$ were equally common.

Question 13

In part (a) the most successful method attempted by candidates was the traditional method of setting out the numbers in columns. The weakest candidates simply subtracted the numbers in any order, for example $4 - 1$, $5 - 2$, $8 - 0$, but the majority proceeded correctly and although there were some errors in 'carrying', many arrived at the correct answer. Methods of splitting the subtraction, for example $520 - 100 - 60 + 2$, tended to be less successful, usually because, as in the example quoted, 2 was subtracted rather than added. A few candidates arrived at the correct answer by adding on from 158. Part (b) was well done. Part (c) was not well done. Common errors were to multiply or divide both 3 and 5 by 4 or to invert $\frac{3}{5}$ and then multiply by 4. A few candidates successfully converted $\frac{3}{5}$ to a decimal and then divided by 4.

Question 14

Part (a) was not well answered. Square root was often confused with squaring or doubling or halving. Answers in the accepted range were not seen very often. Quite a large proportion of candidates did not attempt part (b). Many long multiplications and divisions were seen from those who attempted the question. Those who rounded the numbers usually did so correctly but some rounded the denominator to 1010 or even left it as 1009. There were a few errors in the zeros when multiplying and dividing the rounded numbers, for example $600 \times 40 = 2400$ or $24000 \div 1000 = 240$, but the majority who correctly rounded arrived at the correct answer.

Question 15

Quite a number of candidates had 15, 40 or 75 minutes for the number of minutes in $\frac{3}{4}$ hour. The subtractions across the hour also led to some problems and a number of candidates treated the time 'decimally'. Some candidates misunderstood the question and added on their 45 minutes instead. Of those who successfully arrived at 3.40 pm a significant proportion did not convert to 24-hour clock notation.

Question 16

Many candidates saw this question as an opportunity to perform a long multiplication and for the majority this ended with an incorrect answer. Of those who realised that 3.75 needed to be added to 142.5, many added the units correctly but then simply added 5 to 75 for the decimal parts achieving a final answer of 145.8 instead of 145.26. It appeared as if a few candidates thought this question was a number pattern and merely altered some digits in 142.5, often to 142.6, 143.5, 143.6 or 152.5.

Question 17

For some candidates this question appeared to be the cue to perform a plethora of calculations which filled the whole working space and more. 84 and 150 were divided by any combination of the individual ratio parts or the sum of them. There was probably more success at correctly obtaining the number of girls in Year 11 rather than Year 10 and one common misconception was that the number of girls was $150 - 84$. However, quite a number of candidates did well on this question.