



## **General Certificate of Secondary Education**

# **Mathematics (Modular) 4302** *Specification B*

**Module 3 Foundation Tier 43003F**

## **Report on the Examination** *2008 examination - March series*

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Set and published by the Assessment and Qualifications Alliance.

## General

The paper proved to be accessible to candidates with no evidence of a lack of available time to complete all the questions. The performance on this paper was an improvement over recent sessions with many candidates scoring consistently. 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:

- factors and multiples
- multistep money problem
- calculator work
- division in context
- 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
- working with dates and times.

## Question 1

This provided a good start to the paper for many candidates. In part (b) many correct answers were seen. A number of candidates correctly selected the numbers 48 and 36 but added them, giving an answer of 84, whilst others just selected any two numbers from the list and multiplied but did not attempt to obtain the largest answer.

## 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. However, most candidates selected the correct distance of 57 miles from the chart but frequently attempted incorrect calculations. Those who knew to double '57' and then multiply by 5 frequently showed  $57 + 57 \times 5$  giving 342 as the answer. Many correct answers were seen.

## 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 or an incorrect choice from the table. A few candidates set out this sum in a column and then 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.

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**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  $36 \times 4.25$  directly or realised that  $36 \div 4$  was needed for the 15 minutes were usually successful.

**Question 6**

The need to convert consistently to either metric or imperial distances caused difficulties for many candidates. Most realised the need to convert and frequently changed either  $6\frac{1}{2}$  miles to metres or 35 000 feet to metres, but only a small number completed both calculations for the comparison.

**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**

Part (a) was not well answered. Some candidates simply subtracted 3.2 from 68000. Many others divided by 3.2 while some thought that 3.2% was the same as 0.32. Some candidates calculated the percentage decrease in population correctly. However, this was frequently given as the answer or was incorrectly added to give an increased population. Unfortunately, build-up methods were often seen for calculating 3.2%, where 0.2% was incorrect. The most frequent incorrect build-up method used gave  $3.2\% = 2125$  from  $6.25\% = 4250$  and an answer of 65 875. Few candidates were able to deal with the bound correctly.

**Question 9**

Disappointingly, few candidates could write the decimals in parts (b) and especially part (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 very 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

Part (a) was well answered, part (b) slightly less so with 40 and 1000 seen regularly. Only a small number of candidates knew how to proceed correctly with part (c). 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

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 15

Those candidates using the given answer and realising the connection with the question asked, usually gave a correct solution, however many added the units correctly but then simply added 5 to 75 for the decimal parts to achieve 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. Frequently, long-hand calculations were attempted. These were sprinkled with working errors which meant that few correct answers were seen using this method.

### Question 16

This demanding question was answered correctly by a good number of candidates. Many were able to find the correct number of girls for either Year 10 or Year 11 but not both. 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. Build-up methods using the ratios for each year were frequently seen but most contained computational errors. The basic division method for  $84 \div 4$  often contained errors and gave an incorrect answer from this calculation. Despite these issues, overall, a pleasing attempt was made by many candidates.