



General Certificate of Secondary Education

Mathematics (Modular) 4302

Specification B

Module 5 Paper 1 Foundation Tier

43005/1F

Report on the Examination

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General

This paper, the first two-tier for this module proved to be very challenging for a substantial proportion of the candidates. Algebra questions were generally poorly answered and it was again a disturbing feature that the standard of basic arithmetic was very poor. Often the correct mathematical concepts are shown but are followed by incorrect answers because candidates cannot carry out the basic four rules accurately. A poor standard of division was particularly prevalent. On a positive note, measurement was carried out accurately.

Topics that were well done included:

- reading from scales
- properties of shapes
- multiples
- measurement
- plotting coordinates in all four quadrants.

Topics which candidates found difficult included:

- angle calculations
- interpretation and explanation of distance-time graphs
- multiplication of a decimal by an integer
- perimeter of a compound shape
- expressions and forming equations.

Question 1

This question was well answered. In parts (a) and (b) a few candidates misunderstood the scale and a few reversed the points *A* and *B*. Part (c) was generally completed successfully but a significant number could not cope with negatives giving $13 - - 4 = 9$. Poor arithmetic sometimes led to answers of 16 or 18. Part (d) was well answered.

Question 2

Many candidates appeared to miss the requirement for “metric” units. “Miles” was the most popular answer to part (a) and “feet” was often seen for part (b), although generally this part was well answered. Answers to part (c) tended to be metric but a significant number chose millilitres as their suitable unit.

Question 3

The question was generally well done except for the naming of the rhombus, “diamond” being the most popular choice with “parallelogram” as a frequent alternative. Many candidates gave “4” for the number of lines of symmetry of the rhombus or for the order of rotational symmetry of the rectangle.

Question 4

This question was well answered by almost all candidates. In part (c) some candidates gave 40 as their answer but the most common error was to list the remaining values in the list that were not multiples of 5 or 8.

Question 5

Almost all candidates drew an acute angle but many failed to mark the acute angle. The measuring in part (b) was usually accurate but a significant number of candidates had difficulty with the scale giving 60.3 instead of 63 in part (i). In part (iii) many measured the remaining part

of the line rather than working it out, but this was accepted. Weaker candidates often gave the answer in millimetres.

Question 6

The majority of candidates plotted the four points correctly or had a single error, usually involving the negative coordinates, but then joined their points accurately. Candidates who successfully drew the parallelogram usually went on to name it correctly although a few offered “rhombus” as their answer. Responses to part (d) were quite poor, some clearly not knowing the meaning of the term “property” and giving numerical values. Other candidates offered a variety of incorrect statements often relating to the number of lines of symmetry of the shape.

Question 7

In part (a) most candidates knew to work out 350×2 and the majority were successful but many then gave £7.00 or occasionally £70 as their answer. £702 was also offered quite often. There were many correct answers to part (b) although interpreting the words in the formula proved challenging for many, using £40 instead of $£40 \times 5$ or giving £200 as the total charge or thinking that the fixed charge applied to every day. Many candidates failed to see the link with part (a) adding on £350 instead of £700 to a correctly derived £299. As in part (a), a few candidates chose, having obtained £999, to give £9.99 as their final answer.

Question 8

There was a very disappointing response to this question with few correct answers to part (a). Part (b) was also poor, with many not attempting a solution and many not using the fact that the triangle was equilateral, even though it was stated in the question and shown on the diagram. Answers of 125° were common as candidates often measured the angle on the diagram. Candidates who did realise the interior angle was 60° usually went on to obtain 120° as their final answer.

Question 9

Many candidates recognised Journey A correctly in part (a) but they had difficulty communicating their explanation clearly and without ambiguity. Many discussed two straight lines even though there are five straight lines in the diagram. There were many varied answers to part (b) with arrows pointing to one of the straight lines or often to a single point joining two of the lines. In part (c) most candidates stated “yes” but struggled to give a convincing reason for their answer often just repeating the statements from the question.

Question 10

Most of the errors in the answers to this question occurred in part (b) due to the inability of candidates to multiply 10.5 by 2, with 20.5 being very common. Part (c) was more successful. In both parts some candidates chose to convert to kilometres or centimetres but then made errors with the number of zeros.

Question 11

There were many correct answers to this question. However, some were arrived at from a completely false method, achieved by poor arithmetic. These candidates added 50 and 65 incorrectly to give 105 and then subtracted this from 180 to give 75. Many more candidates used this incorrect method and gave 65 as their answer. Those using incorrect methods were not awarded marks. Many candidates simply looked at the diagram and decided the answer was 90° .

Question 12

Almost all candidates were able to use the table to obtain the correct answers in part (a). Those who chose to use equivalent fractions in part (b) realising that $\frac{36}{48}$ was equivalent to $\frac{3}{4}$ almost always gained full marks although some candidates then went on from this to state that Emma was not correct. Other candidates used a different equivalent fraction for $\frac{3}{4}$ such as $\frac{45}{60}$ but then failed to make further progress. A small number attempted to convert to decimals, but without a calculator this was generally unsuccessful. A greater number of candidates stated, "37 > 3 and 48 > 4" to justify Emma being correct. Correct solutions to part (c) were rare with $77x$ being the most popular answer.

Question 13

The responses to this question were generally poor. Many ignored the semicircles and gave $20 + 20 + 30 + 30 = 100$ as their perimeter. Some of these went on to multiply 100 by 3. Other candidates confused perimeter with area or used a combination of the two. Some candidates calculated 30×20 and added this to 3×20 .

Question 14

In general this question was badly attempted with correct algebra rare, although many candidates successfully found the answer to part (c) by using trial and error. In part (a) candidates who used $x - 3$ often incorporated it into an equation. Responses to part (b) were almost always incorrect with $x = 91$ quite common.

Question 15

There were few correct responses to part (a). Many simply wrote $ab + c$. In part (b) hardly any candidates realised the link with part (a) which would lead to 27×10 . Almost all candidates attempted 27×3 and 27×7 but rarely arrived at 270. Inevitably some made errors in the multiplications, although it was not uncommon to see $81 + 189$ incorrectly worked out. There were two misconceptions that were applied by large numbers of candidates. These were either adding within the terms, $27 + 3 + 27 + 7 = 64$ or not using an operation but instead writing $273 + 277 = 550$.

Question 16

There were many correct answers but also many misconceptions about the meaning of the index 2. 13×2 and 14×2 leading to 26 and 28 were frequently seen. Poor arithmetic was also an issue with $13 \times 13 = 100 + 9 = 109$ and $14 \times 14 = 116$ appearing regularly.

Question 17

In part (a) most of the candidates displayed some understanding of the process required in multiplying out the bracket, but few did so with any degree of accuracy. Inevitably the signs caused most of the problems. Candidates often tried to combine the terms with answers similar to $30ab$ being quite common. Part (b) achieved a greater success rate. $32e - 36 + 8e$ was seen frequently, leading to a final answer of $40e - 36$.