



**General Certificate of Secondary Education
November 2011**

Mathematics

43602F

(Specification 4360)

Unit 2: Number and Algebra (Foundation)

Report on the Examination

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General

Students found the paper more accessible than previous papers with the majority attempting all questions in the allotted time. It was clear that students were better prepared, even on the more challenging questions, but the questions on algebra were again not well answered, with students showing little knowledge of how to solve linear equations or expand brackets. As in the previous papers, the standard of basic arithmetic was often poor, particularly multiplication and division. In some of the longer and more complex questions, students were often able to apply correct methods, but gave incorrect answers because they could not carry out the basic four rules of number accurately. The problem solving type questions were usually answered by trial and improvement methods; students should be encouraged to apply algebraic methods in these questions. Questions that involved functional elements of mathematics were usually better answered.

Topics that were well done included:

- place value
- simple money problems
- proportion.

Topics which students found difficult included:

- prime numbers
- ratio
- solving linear equations
- expanding brackets.

Question 1

This question was well answered by the majority of students. In part (d) the most common error was to write down the smallest number.

Question 2

Part (a) was answered well by the majority of students. Common errors were 0.34 or 3.4 for $\frac{3}{4}$, 9% for 0.9 and $\frac{1}{3}$ for 30%. Part (b) was well done by most students.

Question 3

This question was answered well. Most understood the method required but were unfortunately let down by their arithmetic eg $\pounds 1.70 \times 2 = \pounds 2.40$. Some students correctly worked out $\pounds 3.40$ and $\pounds 6.75$ but did not add them and just wrote 'No'. Many students did not show all necessary working.

Question 4

There were many correct solutions for this question. Some students thought they just needed to give the total each received without showing the distribution of the coins and only wrote 75p on the answer line.

Question 5

Most students understood how to complete the pyramid in part (a) and there were many correct solutions. One of the most common misinterpretations was to add the two previous

values going along the rows eg $11 + 14 = 25$, $25 + 24 = 49$ and $49 + 24 = 73$. Part (b) was also well done. Common errors were: $a + 3a = 3a$ or $3a^2$; and $12a - 4a = 8$.

Question 6

There were many good solutions for this question but quite a number of students made arithmetic errors eg $4 \times 175 = 500$. A few misunderstood what was required and simply added 18 or 24 to everything. Other students multiplied the amounts by 3 and sometimes by 5 or 6. Those who divided each amount by 6 and then multiplied by 24 often got the 240g for sugar but the arithmetic then became too challenging to work out values for the other ingredients.

Question 7

This problem solving question was well answered. The most common errors were to not have three different numbers and to make C three times bigger than B. The most common incorrect answers were 20, 20, 20 and 20, 10, 30.

Question 8

Most students were successful with this question, although a number could not divide 180 by 6 and a common method was to split the 180 into 100 and 80 and then divide each by 6, often incorrectly. A few students started by trying to work out $200 \div 6$ and were then unsure how to proceed.

Question 9

Most students correctly completed the table in part (a) with many stating 'it goes down in twos'. There was less success in drawing the graph with many plotting the points correctly but with no line. A very common error was to plot only one point at (2, 10). A significant number of students drew a bar chart.

Question 10

This question was not well done. The most common incorrect methods were: $8 \times 3 = 24$, $24 \times 4 = 96$ and $8 \div 2 = 4$, $4 \times 4 = 16$. Some students started by stating $\frac{1}{3} = 4$, $\frac{2}{3} = 8$ and $\frac{3}{3} = 12$, but then gave the answer as $\frac{4}{3} = 16$.

Question 11

This question was poorly done. There was little evidence of any working with most appearing to tick a box at random.

Question 12

Few students knew how to answer this question by using the given statement. The majority tried to do a long division in part (a) and a long multiplication in part (b).

Question 13

This question had a varying degree of success with many students only getting as far as £60. Quite a few correctly found 20% of £60 as £12 but then gave this as their final answer.

There were a significant number of arithmetical errors with $60 - 12$ often given as 58 or 38 or 52. It was also common to see $£60 - 20\% = £40$.

Question 14

This question proved to be difficult for most students. Only a handful attempted an algebraic solution but this rarely succeeded in giving the correct answer. Many did manage a positive integer input but it was rare to see negative integers being used. If a negative input was used then a correct output was rarely seen, eg $-2 \times 6 = -12$, $-12 - 2 = -10$ was very common. The few who tried $\frac{1}{2}$ as an input usually gave an incorrect output.

Question 15

A good proportion of students had some success in part (a). Common incorrect answers were $12 - 10 = -22$ and $3 \times 4 = 12$, $12 + 2 - 5 = 9$. It was also fairly common to see $34 + -25$. Just over half of the students obtained the correct answer in part (b). There was little success in part (c). A few students managed the correct expansion of the brackets. Of the few students who obtained $6w = 15$, a good number then gave an incorrect answer of 2.3 or 2 rem 3. There were very few correct answers in part (d). Common incorrect answers were: $a^3 + 4$, $a^3 + 4a = 4a^3$, $3a + 4a = 7a$ and $a(a \times a + 4)$.

Question 16

Most students attempted this question with varying degrees of success. Many failed to work out 15% of £20 correctly and of those who did arrive at the correct answer of £3, it was fairly common to subtract this from £20. A significant number of students did not give a conclusion.

Question 17

This question proved too challenging for the majority of students. A very common error was to start with $5 + 3 = 8$. Common incorrect answers were 15, 5, 22 and 50, 40, 57.

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