



**General Certificate of Secondary Education
March 2011**

Mathematics

43602F

(Specification 4360)

Unit 2: Number and Algebra (Foundation)

Report on the Examination

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General

Candidates found the paper accessible with the majority attempting all the questions in the allotted time. This paper, the second for the new specification, again proved to be challenging for a substantial number of candidates. Most questions on algebra were not well answered and the standard of basic arithmetic was poor, particularly multiplication and division. In some of the longer and more involved questions, candidates were able to apply correct methods, but incorrect answers were often given because they could not carry out the basic four rules accurately. The new problem solving type questions were again virtually all answered by trial and improvement methods. Candidates should be encouraged to apply algebraic methods, where appropriate, in these questions. There were a good number of instances where candidates had crossed out their responses which then made them unreadable. It should be pointed out to candidates that work should not be deleted until it has been replaced by something better. Again, questions that involved functional elements of mathematics were usually well answered.

Topics that were well done included:

- place value
- rounding a number to a given power of 10
- factors and multiples
- equivalent fractions
- simple linear equations.

Topics which candidates found difficult included:

- prime numbers
- converting a fraction into a decimal
- decreasing an amount by a given percentage
- division in a given ratio
- estimation
- the n th term of a sequence.

Question 1

This question was well answered by the majority of candidates. In part (c) common incorrect answers were 2 or 8000 because of the misconception that the digit 4 was to be taken as the fourth digit from the left or the right of the number stated. In part (e), various methods of subtraction were seen with most candidates using a decomposition method and common incorrect answers were 52, 252 and 258. The most successful methods used were $358 + 42 = 400$, $400 + 100 = 500$ and $500 - 358 = 499 - 358 + 1$.

Question 2

Although many correct answers were seen, there were also many cases of poor computation with 20×12 often seen as 122 or 400. Common incorrect methods were $20 + 12 + 30 = 62$ or $20 \times 42 = 840$.

Question 3

Parts (a), (b) and (c) were well answered by most candidates. There was less success in part (d) with many candidates being unsure about cube numbers.

Question 4

Where errors were made it was usually with Chloe's score where candidates tended to double the amount of Ben's score rather than to divide it by 2 or in some cases work out 2×12 . Also candidates often added 11 to Ben's score to get an incorrect answer of 43 points for Dave. Again there was a lot of evidence of poor computational skills, eg $20 + 12 = 22$ and $32 \div 2 = 17$. Weaker candidates simply subtracted the three numbers seen in the question from 100 to give an incorrect answer of 57.

Question 5

Although there were some fully correct solutions, the multi-step nature of the question caused problems for many candidates. However, most candidates did receive partial marks and these were usually obtained from $10 \times \text{£}6.50$, 90×80 or 30×40 . Many candidates forgot to subtract the cost price from the total selling price or tried to work with mixed units. Again, poor computational skills were evident throughout the question, eg $10 \times \text{£}6.50 = \text{£}60.50$ and $90 \times 80 = 720$ or 8100.

Question 6

Part (a) was done well by nearly all candidates. 10 was the most common incorrect answer. There was less success in part (b). Algebraic manipulation was generally poor and those candidates who managed to get as far as $2x = -4$, then often proceeded to give an incorrect answer of $x = -8$. A good proportion of candidates tended to use a trial and improvement method or some form of flow diagram. A common incorrect answer from these methods was $x = -3$.

Question 7

Parts (a)(i) and (a)(ii) were answered correctly by most candidates. Common incorrect answers were 0.25% for 25% and 3.0 for 0.3. Part (a)(iii) was less successful and the most common error was to put $\frac{1}{4}$ first. Parts (b)(i) and (b)(ii) were usually correct. Although some correct responses were seen for part (c), this question was very poorly answered by the majority of candidates. By far, the most common incorrect answers were 0.38 and 3.8, but there were also quite a few cases of $\frac{1}{8} = 0.8$ so $\frac{3}{8} = 0.24$ and $3 \div 8 = 2.2$. The candidates who knew that $\frac{1}{8} = 0.125$ were usually more successful.

Question 8

Just over half of the candidates answered this question correctly. The more able candidates simply wrote down $6 \times 4 = 24$. The most common incorrect answers were 18, 20 or 21. Another common error was to say that $\frac{3}{4} = 6$ so $\frac{1}{4} = 2$, which then led to an incorrect answer of 8.

Question 9

Part (a) was well done by many candidates. Common incorrect answers were -4 and -8 . It was fairly common to see the correct sequence 2, -2 , -10 in the working but with an incorrect answer of -10 written on the answer line. Part (b) was poorly done with $n + 3$ being the most common incorrect answer.

Question 10

Parts (a)(i) and (a)(ii) were quite well done by candidates with the most common incorrect answers being m^5 for $5m$ and $5a + 7b$ for $5a + 3b$. Only a few correct answers were seen for part (b). Many candidates just gave a few numerical examples. Very often candidates gave an incomplete response, such as an even number +1 is an odd number but then failed to consider the second bracket ($n - 1$). The most common answer was to state that an even number +1 and an even number -1 were both odd numbers but many candidates did not realize that they then needed to multiply the brackets to show that the expression was odd. It was also fairly common for candidates to confuse odd and even numbers with positive and negative numbers.

Question 11

In part (a) many candidates only circled one prime number or circled the correct two with another incorrect one, usually 9. It was very common for candidates to circle all the odd numbers. Part (b) was poorly answered with a significant number of blank responses. A few candidates gave an answer of 35 or two correct substitutions into the expression. Common errors included only working out one correct substitution, usually for $n = 2$ or $n = 3$, or assuming that n was prime. A common misconception was to write, for example, if $n = 4$, then $64 - 1 = 63$, which is not prime.

Question 12

There were few fully correct answers. Nearly all candidates used a trial and improvement method, but were usually unable to find the three correct numbers. A large proportion of candidates gave a correct total of 120 with one of the other conditions being satisfied. The most common of these were 20, 60, 40 or 60, 20, 40. Other candidates gave a correct solution but with the numbers in the wrong order.

Question 13

Most candidates were able to start by writing down a calculation that would lead to a correct answer. The most common calculations were 450×3 or 450×4 or $450 \div 2$. Many candidates then continued to give a correct second calculation but gave an incorrect answer because of poor computational skills, eg $450 \times 3 = 1250$ or $450 \div 2 = 200$. A common misconception was for candidates to say that 10 more portions were needed which was then followed by an incorrect answer of 4500.

Question 14

Successful candidates usually worked with finding the cost of 12 tins, with working shown as $\text{£}6.00 - \text{£}1.80 = \text{£}4.20$ for PriceSave and $48\text{p} \times 9 = \text{£}4.32$ for CostCut. However, most candidates found the percentage calculation beyond them and 12×15 was a very common error for finding the cost of 12 tins at PriceSave. There were many computational errors throughout the question. The most common errors involved using 15p or 20p for the new price at PriceSave and working with 8 tins at CostCut.

Question 15

This question was poorly answered and many candidates made no attempt. Many candidates attempted to work out 10.13^2 but were unable to proceed further. It was also fairly common to see $10^2 \div 0.5 = 20 \div 0.5$. A common incorrect answer was 50 which was the candidates' answer to $100 \div 0.5$. 0.496 was often rounded to 0 or 1.

Question 16

Only a minority of candidates circled the correct formula in part (a). In part (b), a number of candidates were able to work out the cost at Woods Tool Hire for two or more days. A few of the more able candidates were able to give a counter example for $d \geq 5$, but they often forgot to compare this with the corresponding value at Branch Tool Hire. Only a very small number attempted to draw the graph of $C = 9d + 11$. A common misconception was for candidates to think that $C = 9d + 11$ gave the cost of £11 for 9 days.

Question 17

This question was not well done, although a few candidates progressed as far as $455 \div 7$. Unfortunately this was usually followed by $65 \div 4$. Marks were often lost through poor computational skills. The most common incorrect answers were 1820 from 455×4 and 113.75 from $455 \div 4$.

Mark Ranges and Award of Grades

Grade boundaries and cumulative percentage grades are available on the [Results statistics](#) page of the AQA Website.