AQA

**General Certificate of Secondary Education
November 2012**

Mathematics **43602F**

(Specification 4360)

Unit 2: Number and Algebra (Foundation)

Report on the Examination

General

Students found the paper accessible with the majority attempting all questions in the allotted time. The algebra questions were generally well answered but it was a concern that the standard of basic arithmetic was at times quite poor, particularly multiplication and division. In some of the longer and more involved questions students were able to apply correct methods, but incorrect answers were often given because they could not carry out the basic four rules accurately. The problem solving questions were again virtually all answered by trial and improvement methods. There were a good number of instances where candidates had crossed out their responses which then made them unreadable.

Topics that were well done included:
- place value
- multiples
- proportion
- formula in words

Topics which students found difficult included:
- cube root
- best value
- ratio
- number machine problem

Question 1

All three parts provided an excellent start to the paper for most students.

Question 2

This question was well answered. Errors occurred through poor arithmetic or incorrectly following the sequence on the right hand side.

Question 3

This question was well also well answered. Some students gave 37 and 56 as having a difference of 21 in part (b).

Question 4

The majority of students correctly doubled the ingredients for 2 people to achieve those required for 4 people.

Question 5

A small number of students appeared to misread the question in part (a) and worked out the cost for three cans instead of four or made arithmetical errors. The change calculation in part (b) caused difficulty for a number of students with common incorrect answers of £3.36, £3.66 and £4.44. A few forgot about the £2 coin. A typical common incorrect answer was 3 × £1, 1 × 50p, 1 × 5p, 1 × 1p. A £3 coin or 6p coin were seen fairly frequently in incorrect lists of coins.

Question 6

Over half of solutions were fully correct. 18 and 7 was a very common incorrect answer and some incorrect responses had a difference of 7.

Question 7

Nearly all students correctly used the formula rule in part (a). Most showed their working clearly and added 40 and 30 successfully, although 60 was seen as an incorrect answer due to poor arithmetic. Part (b) was less well answered. A common incorrect answer was 28 – 30 leading to –2 from inverse operations but not reversing the order of the operations.

Question 8

Parts (a) and (b) were well answered. Part (c) was quite well answered with working nearly always shown. Common incorrect answers included $15 + 8 = 23$, $8 – 6 = 2$, $53 – 42 = 11$, $15f – 8g$ and $7fg$. Some poor arithmetic was also seen.

Question 9

Students coped well with this question and a large number of gave a fully correct response. A common misconception was to halve and halve again and incorrectly stating this as one third. Common incorrect answers were 18 ($12 \div 2 \times 3$) or 6 ($12 \div 2$ or $24 \div 4$).

Question 10

The majority correctly answered the addition of money in part (a) and over half correctly calculated the change from £2 in part (b).

Question 11

The majority of students correctly answered ×10 and ÷100. A common error was to give ÷10 for the second calculation.

Question 12

There was a lot of careless arithmetic seen in response to this question, both in multiplying and subtraction. A common mistake was £35 – £19.50 = £16.50, and students stopped at this point stating that they could buy the DVD. Some were not able to find 10% and others incorrectly gave this as the sale price of the DVD. A fairly common error was to misread or misinterpret and think the DVD was £10 off with the sale price being £6. Some students misread and used 1 or 2 T-shirts.

Question 13

A number of students appeared to have little or no understanding of indices with common answers of 10^5 or 7^6 seen. Other common incorrect answers were: 16 (from 10 + 6), 33 (from

25 + 8) and 60 (from 10 × 6). Over half correctly answered part (b). In part (c) the majority of students did not understand how to calculate the cube root of a number or make the connection with the opposite of a cube. Some incorrectly presented their answer as $4^3 = 64$.

Question 14

The large majority of students correctly found all three y values in part (a).   Some excellent ruled lines were seen in part (b) but common errors included: not using a ruler, line out of tolerance or a double line drawn. Many students plotted a correct set of points but then did not join them to make the graph.

Question 15

Only half of students identified the correct prime number in part (a). In part (b) some repeated 39 = 3 × 13 from the question and marks were frequently lost with poor arithmetic or inadequate knowledge of prime numbers, with 1 frequently being incorrectly used. Some students gave answers outside the given range.

Question 16

A lot of information was given in this question.   A large number of students effectively broke down the question and set out their work in 3 columns, sections or bubbles. A structured approach yielded the best return in terms of marks awarded.
The main points were:
*   Electrical Supplies: a common mistake was to say that 10% is 2.5 and end up with 7.5 discount, or to correctly find 30% = £75 but state the new price as £75, a few tried to incorrectly find 1/3 of £250.
*   New Homes: Many stated that 1/3 = 30% and then tried to find 30% of £240. Most marks were lost on this element because of this misunderstanding. Students seemed more confident at working out 30% than 1/3. Some successfully found 33% of 240 but lost the accuracy mark. A number of students thought that to get 1/3 they had to divide by 2 and then by 2 again, so incorrectly finding 1/4 of 240. This meant that a common mistake was 240 - 60 = £180.
*   Fridges for Us: Many misunderstood the idea of a deposit and £50 was often omitted because candidates indicated you get it back at the end. Some added, writing 50 + 20 and multiplied 70 by 6.
*   It was common for students to not take discount off and state it as the final price and stop at £75, £80, £170 but then to correctly follow through with Electrical Supplies.

Question 17

Students broke this question down into the separate ratio and fraction components. Quite a number showed correct methods to both parts and used their values to collate and come to a decision. Students who used a diagram approach for both the ratio and fraction components to visualise their working usually made good progress. Students were more successful on the ratio than the fraction part. On the ratio part, common misconceptions were to show 280 divided by 4 but go no further or to scale up incorrectly from 4 : 3. On the fraction part, many students correctly found 1/5 of 180 but used that as the number of boys. Inefficient division of 180 by 5 led to numerical errors and very few used the method of dividing by 10 and doubling to find 1/5. A successful method employed was to use equivalence of 60% for boys, find 10% =

18 and then calculate 18 × 6 to find 108 boys. 232 females were generally compared to 228 boys with few stating more than half (230).

Question 18

Few students attempted an efficient algebraic method. Most managed just one correct trial. Some gave a trial for both 4 and 5 but did not go on to trial 4.5.

Grade boundary ranges aqa.org.uk/gradeboundaries

UMS conversion calculator www.aqa.org.uk/umsconversion