**General Certificate of Secondary Education
November 2012**

Mathematics **43651F**

(Specification 4365)

Paper 1 (Foundation): Non-calculator

Report on the Examination

General

Students appeared to be well prepared for the paper. They generally showed a good understanding on questions with functional elements where familiar contexts put them at ease. Arithmetic skills were often weak and students should be encouraged to check the sense of their answers: for example, a cup of coffee costing £120, or a profit greater than the takings are clear indications that an error has been made.

Topics that were well done included:
- reading scales
- identifying nets
- interpreting a bar chart
- number machines
- solving a coin problem
- using multiples in a functional context
- using a sample space diagram.

Topics which students found difficult included:
- fractions and percentages
- simplifying
- expanding brackets
- transformations
- perimeter problem.

Question 1

Parts (a) and (b) were well answered. In part (c) many students worked out the area. Some students counted the squares around the edge of the rectangle and included the corner squares in their total.

Question 2

These basic number calculations caused few problems.

Question 3

Students found this functional problem accessible, with most of them appreciating that they needed to start by finding the total cost of the coffees.

Question 4

Students were able to demonstrate a good understanding of reading scales.

Question 5

The vast majority of students correctly linked each net to a solid.

Question 6

Parts (a) and (b) were very well answered. Part (c) was a good discriminator with many students able to draw bars that fitted at least one of the given criteria. Bars were sometimes altered and it was not always clear which was the intended solution. In part (d), although there were many fully correct solutions, there was evidence of poor arithmetic and some students calculated the profit for one of the other weeks.

Question 7

Both parts of this question were well answered. Some students gave an embedded answer in part (b).

Question 8

Most students gave two sets of coins worth 55p. However, occasionally, they did not have four coins in each set.

Question 9

In part (a), not all students gave the answer as a percentage. Most students were able to select at least one of the correct fractions in part (b). In part (c), there were many incorrect attempts to build up to 40% but often the arithmetic was poor and a full method was not shown. Many students did unnecessary further work by subtracting 28 from 70.

Question 10

This question was a good discriminator and many students clearly communicated their full method. Confused thinking resulted in a very common error, when it was stated that a fifth is half of a tenth so the National Insurance was halved to find the tax, rather than doubled. Some worked out a fifth of the pay after National Insurance had been deducted.

Question 11

Part (a) was well answered. The main error was to give an answer that was only partially simplified. Part (b) was poorly answered. Again, many answers were only partially simplified, with many containing multiplication signs.

Question 12

Many fully correct solutions were seen for this problem-solving, functional question. The majority of students listed multiples, but the method was not always clearly shown. Some students misinterpreted their own working when giving the final answer. Others simply divided 36 by 8 and by 5 and were unable to make any progress.

Question 13

Most students who understood the concept of range generally gave completely correct solutions, although arithmetic errors were sometimes seen. Frequently the mean, median or 'false' range (last – first) were calculated.

Question 14

The majority of students made a good attempt at this question. However, many students evaluated –8 + 15 as –23. $4x$ was often interpreted as 4 – 2. Some students substituted, but also left variables in their expressions, so $-8x + 15y$ was often given as the answer.

Question 15

The method of multiplying out brackets and simplifying was generally well known. Many students were able to correctly expand three of the four terms and progress to correctly collect these terms. Sometimes working was unclear, particularly when students expanded the two brackets separately and omitted the subtraction sign when combining them.

Question 16

Most students were able to interpret the stem-and-leaf diagram successfully. Many students wrote out all the values for part (c) rather than using the given diagram and often included the retired teacher.

Question 17

All three parts of this question were well answered. There were some incorrect angles in part (b) because of arithmetic errors.

Question 18

Students showed a poor understanding of transformations in both parts of this question. Very few understood and correctly applied the term 'translation' in part (a). However, a number of students did attempt to write the translation in vector notation but not always with success. In part (b), some students knew that they needed to draw a reflection of shape B in the fourth quadrant but were usually inaccurate in the positioning of the image.

Question 19

The vast majority of students chose to fill in the grid. Those who did not complete the grid often struggled to progress with either part of the question. Part (a) was very well answered. In part (b), many thought that the probability should be out of 16. Sometimes arithmetic errors in the grid, particularly for 1 + 1, meant an incorrect probability was given. Some students gave probabilities in an incorrect format, using words or ratio.

Question 20

This question was very poorly answered. Only a small number of students managed to give a completely correct solution. The vast majority were unable to access the question and make any progress. Many interpreted the length as 6 cm or as 6 more than x. Some students included the middle line in the diagram as part of the perimeter. Very few algebraic attempts were seen, with most students using trial and error.

Question 21

The final question was well answered with a good number of fully correct solutions. The working was not usually very well presented but sometimes angles were labelled on the diagram which helped. Most students were able to work out that angle ADB was 40°. A frequently seen misconception was to then assume that $y = (180 - 40) \div 2$. Some students assumed that triangle ADB was isosceles.

Grade boundary ranges aqa.org.uk/gradeboundaries