



**General Certificate Secondary of Education  
June 2012**

**Statistics**

**43101F**

**(Specification 4310)**

**Unit 1: Foundation**

***Report on the Examination***

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## Unit 1: Foundation Tier

### General

This year, there has been a deliberate policy to make the questions more accessible for Foundation tier students. As a consequence, the mean mark has increased from 38 to 56 (out of 80). There were also more opportunities for weaker students to display their skills: the semi-lower quartile increased by 23 marks.

There was evidence of a good understanding of statistical concepts at this level. The new topic of Spearman's rank correlation coefficient seemed to be known by most students although the second explanation in that question was not well done. Students scored well throughout the paper but arithmetic errors cost students many marks. When answers are worked out mentally they should be checked using a calculator.

Topics that were well done included:

- simple probability
- drawing and interpreting pictograms
- reading from and drawing multiple bar charts
- interpreting scatter diagrams.

Topics which students found difficult included:

- discussing if the lowest value is a good mode
- describing a method to obtain a random sample
- explaining a number allocation for a simulation
- recognising a 'no correlation' value for Spearman's rank correlation coefficient.

### Question 1

Part (a)(i) provided a good start for nearly all students. There were very few who didn't place 'impossible' and 'certain' correctly. The most common error was giving 'likely' for blue and even though this was used again for blue or red these students had clearly not read the fact that each word should just be used once.

Part (a)(ii) had an excellent response with the occasional incorrect answer of  $\frac{6}{14}$  seen.

The final part was also well done although some left the answer as a fraction, ie  $\frac{8}{40}$ .

### Question 2

Parts (a) and (b) were both well done.

In parts (c) and (d) the pictogram was understood, the key correctly completed and nearly everyone drew appropriate half symbols.

Questions such as part (e) are not usually well done but generally students found a difference and a similarity. There was a wide variety of answers in part (e)(i); whereas in part (e)(ii), 'coach trip' had the least or 2 people choosing were the common responses. Some students lost marks by incorrectly quantifying an otherwise correct statement.

### Question 3

Parts (a)(i) and (a)(ii) were usually well done, with some predictable answers of 55 for peas.

The composite bar chart was also well done although some did not realise the bar needed to be in the same order as the one drawn for comparison purposes. Those who made bar height errors usually scored the mark for shading, as per the key.

#### **Question 4**

Some students did not realise that they had to read off half-way (60) up the vertical scale for the median value.

In part (b) many scored the mark although some misread the scale. Some did not understand what a cumulative frequency graph shows, as a common error was to give the answer 96 and 38 or  $96 + 38$  having read the cumulative frequency values for the two points plotted at 2000 and 1000.

In part (c), a number were using probability words instead of their answer from (b).

#### **Question 5**

Forming a suitable hypothesis was a problem for many students and there were two main errors seen - one was to ask a question instead of stating a hypothesis and the other was to simply repeat the last 11 words of the stem of the question.

In part (b) those who scored usually did so for saying that only one driver's passengers were asked or implying this by commenting that the driver may only work in one area. Very few said that the survey was only done during one week. Many said (incorrectly) that the manager should have asked all drivers.

Parts (c) and (d) were also well answered apart from when the numerical evidence gathered was not backed up by a written comparison.

In part (e) a significant number of students realised that costs/values had never been stated, so it was not possible to tell if more money would be made.

#### **Question 6**

Part (a) was well answered although simply saying "2200 occurs 3 times" is not sufficient and that "most said 2200" is incorrect.

In part (b) some did notice that 2200 was the lowest value for a "No" answer and others discussed the context and that the most common estimate may well be a good thing to go with for a "Yes" answer, but most were not able to produce a valid reason.

In part (c) most circled one correct measure and one incorrect.

#### **Question 7**

Parts (a) and (b) were very well done but there were some incorrect descriptions in part (c).

#### **Question 8**

Students must take account of a context in questions like this as 'putting 40 ducks in a hat' is not realistic. Most did not discuss numbering and then find a procedure to obtain random numbers (such as a calculator).

In part (b)(i) many scored a mark for ticking Muscovy duck but again found it difficult to explain why. Many said that the Muscovy weighed 5.2 kg but did not rule out the other two as lighter than this.

In part (b)(ii) few correct answers were seen - the most common error being to divide by 4.4

#### **Question 9**

This question was quite well done and students are improving series by series when giving reasons for doing a particular method of data collection.

**Question 10**

Part (a) was very poorly done as students could not match the 50 digits 00 - 49 for Critical with the fact that 50% of the records for the Friday were critical.

However, many students went on to produce some excellent responses for the rest of the question particularly parts (b)(i) and (b)(ii).

In part (b)(iii) it was often unclear as to which set of data a student was talking about - the minimal mention of "the original results" or "last week" or equivalent was needed. Frequently seen comments were such as 'More people were in the serious group', ie they could be talking about the results for one table rather than comparing the results for last Friday with the simulation. Other problems involved comparison of numbers rather than proportions. Quite a few scored the mark for a comment that said the 'Minor' category has the least in both results (as this was true for both numbers and proportions).

**Question 11**

Part (a) was answered well by a high proportion of students. A small number of students failed to draw a line for the width of the top bar.

The remaining parts showed a good understanding of the data.

**Question 12**

A choice of answers enabled students to get some credit on this topic, especially in parts (b) and (c). "Explanatory", although specifically mentioned in the specification, is not well known.

**Question 13**

Part (a) was quite well done although many needed to be more concise in their explanation - for example, it is not sufficient to merely state that the numbers are all the same, the 100 had to be referenced.

Parts (b) and (c) were very well answered.

**Question 14**

Spearman's rank correlation coefficient is a new topic to Foundation tier in the new specification. Most discusses the idea of a positive correlation in part (a)(i) but, in part (a)(ii), very few seemed comfortable talking about no correlation (most indicated a negative correlation).

All of part (b) was very well answered as the vast majority of students kept working successfully right to the end of the paper.

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