Principal Examiner Feedback

January 2017

Edexcel Award in Statistical Methods
Level 1 (AST10)

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Principal Examiner Feedback – Level 1

Introduction

There was no evidence to suggest that students had difficulty completing the paper in the given time. The vast majority of students completed their answers in the spaces provided and many showed the steps in their working. The presentation and use of probabilities was an issue for some students.

It was pleasing to see so many students showing the intermediate stages in their calculations; this is to be encouraged as it allows for part marks to be awarded where slips are made in calculations.

Some students did not use a ruler when drawing the bars in question 8.

The design of this paper and the performance of students on this paper were consistent with previous papers so allowing a pass mark of about 66% of the total mark to be considered as showing proficiency in Statistical Methods at Level 1.

Reports on Individual Questions

Question 1

This question was generally answered well. In part (a) the majority of students were able to correctly identify that (i) was unlikely and (ii) was impossible. Where students did not give the correct answer they often chose another word which could be used to describe a likelihood.

In part (b) there were a high number of correct answers.

Part (c) of the question was correctly answered by around half of candidates. The most common error was to give a word to describe the likelihood (generally evens); other candidates gave the answer $\frac{50}{50}$ which is not an acceptable form for probability.

Question 2

This question was generally done well. In part (a) students were able to identify the correct hotel from the table and in part (b) they were able to identify the hotels which did not allow dogs.

The majority of students were able to identify the two hotels including breakfast and dinner. A small number of students identified more than two hotels which suggested that they had not read the question carefully.

In part (d) the majority of students were able to identify the hotel being referred to in the table and to find the information requested.

Question 3

Part (a) was answered very well. The majority of students were able to use the key to find the correct answer.

Part (b) was generally answered well as many students used the key to obtain the correct answer. The most common approach was to find the number of televisions sold in October and the number of televisions sold in November and then subtract. Where incorrect answers were seen this was sometimes due to errors in reading the chart and sometimes due to errors in subtraction. Students should be encouraged to show working as there were a large number of correct and incorrect answers where no working was seen.

Part (c) was generally answered well with many fully correct answers seen. Where incorrect answers were seen students who showed their working were often awarded 1 mark for only making one error in the calculation.

Question 4

Part (a) of this question was done reasonably well. The majority of students were able to list the possible combinations of crayon colours, however many of the answers contained repeats and extra answers. A large number of students did not recognise that there was only one of each colour of crayon and gave pairings indicating two of the same colour (R, R), others did not recognise that the order of the colours in the pairings did not matter.

In part (b) many students could not use their answer to (a) to give the probability of a red crayon and a blue crayon. A common incorrect answer

Was $\dfrac{2}{4}$ which appeared to be due to giving the total number of red crayons and

blue crayons as a fraction of the total number of crayons.

Question 5

This question was done reasonably well. The majority of students were able to gain at least one mark for identifying at least one reason why the graph was misleading or wrong. Many students attempted to write down three reasons even if one or two were incorrect. Students should be encouraged to ensure that the reasons they give are clear as this was not always the case.

Question 6

Part (a) was answered well. It was pleasing to see that the majority of students could make correct comparisons between the two pie charts.

Part (b) was not answered well. Some students did identify that the question was unsuitable or that the options were too vague, but it was not common to see both problems identified. Common incorrect answers included reference to the question being too personal, stating that only one person could answer using the sheet and reference to the words 'near' and 'far' being repeated in the answer options. A small number of students simply answered the question that they were being asked to comment upon.

Question 7

In part (a) the majority of students were able to score 1 mark for identifying the correct spinner, however most did not go on to give a clear reason for their decision. It was common to see partial reasons which referred to, for example 'more white'.

Part (b) was not done well. Some students gave the correct answer referring to the probabilities being $\frac{1}{6}$. Common errors were to indicate that the dice was 6 sided without explaining what this meant or to indicate that the probabilities should be $\frac{3}{6}$ and $\frac{4}{6}$.

Question 8

A significant number of students were able to score at least 3 marks – usually for correct bars on the chart together with either the labels on the carriage axis or a correct key. Common errors included incorrectly plotting the values of 7 and 9, omitting labels from the carriage axis or omitting a key. Some students did not consider the space available in the grid and drew very wide bars or left large gaps between bars and were not able to plot all of the values listed on the chart.

Question 9

Part (a) was generally answered well. The majority of students were able to correctly complete the frequency table although some used tallies to do so.

In part (b)(i), a good number of students gained the mark for finding the correct probability using their frequency table. A common error in calculating the probability was to give the answer $\frac{4}{11}$ – the number of heads over the number of tails.

Part (b)(ii) was not done well. Students often referred to the coin being biased or stated that there should be equal numbers of heads and tails. Other incorrect

answers indicated that the outcome of spinning the coin could be heads or tails and that it was chance that it landed on one or the other.

Question 10

In part (a), a significant number of candidates were able to score at least 2 marks usually for finding the correct total number of points and the number of games scored. Students generally did not show their working for the range and so scored either 2 marks for the correct range of 28 or 0 marks where their value of the range was incorrect.

In part (b), a significant number of students did not know how to calculate the mean score, this often lead to comparisons of the total scores for the two teams. Where correct calculations for the means were seen this was often accompanied by a correct comparison, however some students merely stated the means and did not compare. Students should be reminded that in questions asking for a comparison of values they should make a clear statement of their comparison.

Question 11

Part (a) was done well. The majority of students were able to correctly identify the number of gold medals won by Great Britain and Northern Ireland from the table.

In part (b), the majority of students were able to correctly complete the table. However, there were also a reasonable number of partially correct or incorrect answers. Incorrect values in the table were sometimes a result of slips in calculations and sometimes due to misunderstanding how to use the values given to find the missing entries.

Part (c) was not answered well. Students generally could not identify the type of data given in each of the two statements. The majority of students were not able to identify that number of medals was an example of discrete data.

Question 12

In part (a), many students were not able to identify the number of boys represented by the stem and leaf diagram.

In part (b), around half of the students were able to identify the mode for the data in the stem and leaf diagram.

Part (c) was done poorly. Many students did not understand how to calculate the range of the stem and leaf diagram. Students who did know how to calculate the range of heights for the boys did not always give a statement comparing the range for boys and the range for girls. Students should be reminded to make a statement of comparison when they are asked to calculate and compare values.

Question 13

Part (a) was not answered well. Where students did know to order the values from smallest to largest there were a reasonable number of fully correct answers. Common errors were to state 35 and 43 as the answer, to make an error when finding the middle value and give 35 or 43 as the answer or to calculate $43 - 35$. A significant number of students confused median and mean.

Part (b) was answered poorly. Some students were able to correctly calculate the mean selling price of the cars, however errors in addition of the values leading to an incorrect final answer were common. A significant number of students confused mean and median.

In part (c), a reasonable number of students were able to accurately plot all of the required points and gain 2 marks. Common errors related to incorrectly reading the scales on the axes. It was pleasing to note that only a minority of candidates did not make a meaningful attempt at the question.

In part (d) most students were able to identify that the scatter graph showed negative correlation. Common incorrect answers were positive correlation or no correlation. It was pleasing to note that very few candidates attempted to describe the relationship between the age of the cars and the selling price.

Part (e) was not answered well as only around half the students were able to use the scatter graph to predict the selling price of the car.

Question 14

Part (a) was not answered well. Some students were able to identify that the trend was upwards, however there were a high number of incorrect answers. The most common error was to describe the fluctuations in the time series graph rather than an overall trend.

In part (b) around half of students were able to find the differences in milk production between the quarters as required. Where working was seen the most common error identified was misreading of the scale leading to values of 1405 and 1307 rather than 1450 and 1370. Many students did not show their working.

In part (c) the majority of students were not able to find the total amount of milk produced in 2015. Where working was seen the most common error identified was misreading of the scale. Some candidates who misread the scale made only one error, most often 1502 rather than 1520, and were awarded 1 mark.

Question 15

In part (a) of the question most students were able to score at least 1 mark and frequently at least 2 marks. A common error was to include two columns that referring to frequencies and totals rather than including a column for tallies.

Part (b) was answered poorly. The most common error was to find the probability that the sweet was not red or green, working out $1 - (0.27 + 0.38)$. Some students found the correct probability, but used incorrect notation in giving their answer as $\frac{0.73}{1}$ gaining the method mark only.

In part (c) the majority of candidates were able to correctly calculate the probability of a red or green sweet. Where errors were seen these generally involved incorrect calculations using 0.27 and 0.38. Some candidates used incorrect notation when giving their answer.

Question 16

This question was answered very poorly. The majority of candidates were not able to score any marks in either (a) or (b). It was clear that candidates did not know how to find the angle to represent British people on the pie chart, nor how to find the number of people represented by one of the sections of the pie chart.

Question 17

In part (a) most students were able to score 2 marks for use of tallies and having one correct frequency. A common error was to include 6.0 in the $6 < w \leq 8$ group rather than the $4 < w \leq 6$ leading to frequencies of 7 and 3 rather than 8 and 2 for these groups.

Part (b) was answered reasonably well with a good number of students giving either the correct answer or giving the correct answer for their table in (a).   A common error was to give the answer $\frac{11}{25}$ which was the probability of weights between 2kg and 4kg rather than below 4kg.

Summary

Based on their performance on this paper, students are offered the following advice:

- Read the question fully and carefully before attempting to answer it.
- Show working out to support the final answer.
- Write down probabilities as fractions, decimals or percentages.
- A demand for a probability requires a numeric response, whilst a demand for likelihood requires a word response.
- Give concluding statements when asked to make a comparison.
- Check methods and answers more carefully.

Grade Boundaries

Grade boundaries for this, and all other papers, can be found on the website on this link: