Principal Examiner Feedback

January 2017

Edexcel Award in Statistical Methods
Level 2 (AST20)

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Introduction

Most students attempted all the questions on the paper so that 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.

Many students showed the intermediate steps in their calculations.

The design of this paper was consistent with previous papers and the performance of students on this paper was consistent with that expected when the paper was set so that a pass mark of about 66% of the total mark could be considered as showing proficiency in Statistical Methods at Level 2

Reports on Individual Questions

Question 1

The vast majority of students answered this question well. Some students mixed up their answers for continuous and discrete and were only able to identify categorical.

Question 2

The vast majority of students were able to score full marks for this question. In part (a) most students were able to read of values correctly. A few students mixed up the values for pasture and set aside. In part (b) most students were able to plot the bars to the correct heights. It was disappointing to see that a few students did not interpret the key, so never shaded the bars.

Question 3

This question was answered well, with the majority of students scoring full marks. Students were able to complete the two-way table accurately without error. Students should be reminded to check their calculations after completing the table.

Question 4

Part (a) was answered well and the majority of students were able to find the median number of cars. Part (b) was also answered well by most students, however some students divided their $\sum fx$ by 4 instead of 25 and a few students incorrectly calculated $\sum f \div 4$

Question 5

Part (a) was answered well and the majority of students were able to write down the modal class interval. A common arror was to give an answer of $120 < w \leq$

130 which was the middle group. Part (b) was generally done well. Most students were able to plot the required frequency polygon. A common error was not plotting the frequencies at the midpoint of the interval; this could gain 1 mark if the plotting was consistent, frequencies correct and the points joined by line segments. Some students made mistakes when plotting one or more of the points. A small number of students joined their points with a curve. Students should be advised that they are not expected to continue their frequency polygon beyond the lowest and highest mid interval values.

Question 6

This question was answered well by most students. In part (a) an answer of outlier/anomaly was seen by the vast majority of students, however some students failed to answer this part of the question. In part (b) most students were able to describe the relationship between the height and weight of the children. In part (c) the majority of students were able to draw a suitable line of best fit. In part (d) many students were able to use their line of best fit to find a sensible prediction for the child given the weight, but students should be advised to show their working by drawing appropriate lines to support their prediction.

Question 7

This question was answered well with most students scoring 2 marks and the majority of students scoring 1 mark for a correct feature that was wrong/misleading. However students must be more specific and too many students lost a mark for statements like 'the bars are different sizes'.

Question 8

This question was done well. In part (a) many students were able to gain 3 marks for drawing a fully correct stem and leaf diagram with a key. Where full marks were not gained this was commonly due to the omission of the key, although in a small number of instances there were errors or omissions in the leaves of the diagram. Students should be encouraged to check that the number of leaves match the number of pieces of data given in the question. Part (b) was done well by most students as they were able to use their stem and leaf diagram to identify the median. A few students failed to interpret the key and gave an incorrect answer of 5. In part (c) there were many fully correct answers but also instances of students identifying the wrong values for their quartiles due either to finding incorrect positions for the quartiles or misreading the stem and leaf diagram.

Question 9

This question was done well by most students. In part (a) many students were able to give a correct answer without showing any working, however a few students gave an answer that used incorrect notation e.g. $\frac{0.3}{1}$. In part (b) students were generally able to calculate the probability of the spinner landing on 4. A common error was to add the probabilities in the table to reach an answer of 0.55 but then not take this away from 1. Part (c) was done well by most students, however some students left this blank and a common error was

to multiply by an incorrect probability. Part (d) proved more challenging for students and whilst there were a good number of correct answers there were too many students who calculated figures and then failed to make a comparison.

Question 10

This question was done well by the vast majority of students. In part (a) students were able to complete the sample space diagram accurately without error. In part (b) the majority of students were able to use the sample space diagram to find the required probability.

Question 11

In part (a) many students were able to explain why a sample of pies should be tested rather than the population of pies, however too many students wanted to state a disadvantage of a census and failed to miss the context of pies being destroyed. Many students were able to score at least one mark in part (b). Most students identified either that the sample was too small or pies should be tested throughout the day.

Question 12

This question was done reasonably well. Part (a) was done particularly well by the vast majority of students and it appears that students are well rehearsed in looking for questionnaires with overlapping boxes and boxes that are non-exhaustive. In part (b) most students were able to gain at least 1 mark for designing a suitable question for use in the questionnaire, although some students did not include a time frame or failed to ensure that the response boxes were exhaustive or non-overlapping. A few students rewrote the question from part (a) and such scored 0 marks.

Question 13

Part (a) was generally done well with many students being able to obtain full marks for completing the probability tree diagram. Part (b) and part (c) was also done well and the majority of students gained full marks for correct probabilities. A common error in both parts was to add rather than multiply the two probabilities. It was disappointing to see that a few students gave answers that were greater than 1 seemingly without realising that their probability was not possible.

Question 14

The majority of students were able to identify correctly the class interval that contained the median for part (a) of the question. In part (b) there was a reasonable number of fully correct answers, although some students gained only part marks due to multiplication or addition errors. Some students gained part marks for correctly obtaining 2800 but then divided by an incorrect total frequency.

Question 15

This question was done reasonably well. Many students gained full marks. Some students only gained 1 mark for finding 7.8 but failed to realise that this needed to be rounded to give the number of members who preferred the 400 m in the sample.

Question 16

In part (a) many students were able to identify the median. Those who got an incorrect answer but showed working generally scored 1 mark for ordering the data. In part (b) there was a reasonable number of fully correct answers with most students scoring at least 1 mark. The common error was that students did not interpret the scale correctly and therefore plotted the points incorrectly. In part (c) many students were able to identify correctly the skew of the distribution as positive, however there was too many students who thought that the skew was negative. In part (d) most students gained at least 2 marks by giving two correct comparisons. Where students did not gain full marks this was often due to stating values without comparison or comparing the least values, the lower quartiles, the upper quartiles and the greatest values. Many students were not able to compare the skews of the distributions correctly.

Question 17

Part (a) was well done and the majority of students calculated correctly the required 3-point moving average. In part (b) it was pleasing to see that many students were able to describe what the moving averages showed about the trend. Common errors were to comment on sales in a particular season or the variations in the original values rather than the moving averages. The majority of students were able to calculate the required index number in Part (c) (i). Common errors in calculating the index number included omitting to multiply by 100 and taking December as the base month rather than November. Part (c) (ii) was done better than in previous series and many students were able to interpret their index number, however too many students either failed to say that this showed an increase or failed to include the % sign.

Question 18

It was pleasing to see that this question was answered better than in previous series and many fully correct solutions were seen. Those students who failed to gain full marks generally scored 2 marks for $\frac{6800}{40} - \left(\frac{500}{40}\right)^2$ or 1 mark for either $\frac{6800}{40}$ or $\frac{500}{40}$.

Question 19

This question was done better than in previous series and many students gained full marks as they were able to calculate correctly the weighted mean. Common errors included finding the mean of the two given mean weights or adding the 2 given mean weights.

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 clear working to support the final answer and when necessary give a clear decision as well as the reasons
- ensure that when asked to make a comparison that two or more things are actually compared
- ensure that scales are read accurately, both when plotting and when reading off values from axes
- consider whether answers are reasonable such as in the case of probability questions and questions given in context.

Grade Boundaries

Grade boundaries for this, and all other papers, can be found on the website on this link:
http://www.edexcel.com/iwantto/Pages/grade-boundaries.aspx