Pearson Edexcel

Examiners' Report
Principal Examiner Feedback

January 2020

Pearson Edexcel Level 2 Award
In Statistical Methods (AST20)
Paper 1

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Introduction

There was no evidence to suggest that students had difficulty completing the paper in the given time.

Students were able to complete their answers in the spaces provided and many showed intermediate steps in their calculations.

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 2.

Report on Individual Questions

Question 1

Part (a) was answered well by students that knew how to set out equal class widths with only a few students making a slip when completing the table. However too many students were unable to set out equal class widths and generally started the second class interval at 116 rather than 115

Part (b) was answered well by the vast majority of students and those students that had lost marks part (a) were able to follow through to give the correct modal class interval.

Question 2

In part (a) generally students were able to complete the sample space diagram accurately without error.

In parts (b), (c) and (d) the majority of students were able to use the sample space diagram to find the required probability.

Question 3

Students generally find questions like this, when an explanation is needed, difficult. Language is often poor and answers given are often too vague. Students at best could score 1 mark for giving a standard answer so 2 marks was rarely seen. Often students gave answers that did not answer the question or gave answers that were too vague or mixed up whether it was or was not biased.

Question 4

Those students that knew what a stratified sample was answered the question well with a few failing to round their final answer to 41. However it was clear that many students had no idea on how to calculate a stratified sample.

Question 5

This question was answered well, with the majority of students scoring full marks. Many students were able to complete the two-way table accurately without error. Some students however gave a correct solution but failed to give the totals and so lost 2 marks.

Question 6

This question was done well by most students. In part (a) most students gained at least 1 mark for either an appropriate question with a time frame or for at least 3 non-overlapping answer boxes. Common issues included the omission of a time frame, or gave overlapping response boxes.

Parts (b) and (c) was answered well. A high proportion of students could identify an advantage of taking a sample with quicker and cheaper being seen frequently. Many of the students were also able to identify a problem with the sample selected. Common correct answers to part (c) were to indicate that the sample would be biased, that the sample was only teachers at her school (not representative) or that it was a small sample. There was a range of different incorrect answers.

Question 7

This question was generally answered well. The majority of students could correctly calculate an estimate for the number of times that the spinner will land on yellow. Where incorrect calculations were seen, these generally involved working with the numbers from the question.
A few students lost the final mark as they failed to round their final answer to 97

Question 8

Generally this question was answered well by the vast majority of students. Many students scored full marks but a few students misread some values (usually B and C).

Question 9

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 *x* axis is not labelled properly’.

Question 10

Students were generally poor at identifying the median and quartiles and a number found the scale on the diagram difficult and so scored 1 mark in part (a). Some students identified the median but then failed to find the quartiles. Some students found the scale of the diagram difficult and so plotting errors were common.

Part (b) was answered poorly as students could not identify the skew. This time the diagram was symmetrical rather than, the usual, positively or negatively skewed and therefore students generally lost this mark as they thought the answer must be positively or negatively skewed.

Question 11

Many students were able to identify the median from the cumulative frequency diagram and score 1 mark. Unsurprisingly, students found identifying the quartiles from the cumulative frequency diagram more challenging than finding the median and so it was not uncommon to see incorrect values identified.

Question 12

Part (a) of this question was generally done well with the majority of students able to produce a fully correct ordered stem and leaf diagram with a key. Where full marks were not awarded, this was generally due to missing “leaves” and less commonly due to the omission of the key.

The majority of students could identify the median from their stem and leaf diagram in part (b). It appeared that a small number of students could not find the median from a stem and leaf diagram with some using an ordered list of the numbers given in the question (generally leading to the correct answer) and others making errors when attempting to use their stem and leaf diagram.

Students found part (c) of the question more challenging. Unsurprisingly, students found identifying the quartiles from the stem and leaf diagram more challenging than finding the median and so it was not uncommon to see incorrect values identified. Some students incorrectly gave the range rather than the interquartile range. Where students had omitted a value in producing their stem and leaf diagram they found it challenging to follow through in parts (b) and (c) to find the correct median and the correct interquartile range from their stem and leaf diagram.

Question 13

Part (a) was done well and many students could complete the probability tree diagram and score 2 marks.

Part (b) was not done so well. Far too often students can complete the tree diagram and score 2 marks but then have no idea on how to calculate probabilities using this. In parts (b) and (c) too many students add probabilities that should have been multiplied. In part (c) very few students realised that all they had to do was subtract their part (i) from 1

Question 14

Part (a) was answered well with many students describing a correct relationship.

Part (b) caused more issues as some students did not use the given summary statistics and so lost 2 marks.

Part (c)(i) was generally answered well and the follow through allowed for students that could not calculate the mean point correctly to still score this mark.

Part (c)(ii) was answered well with the vast majority of students drawing a sensible line of best fit.

Part (d) was answered well with the vast majority scoring 1 mark.

Question 15

In part (a) many students were able to calculate the required 4-point moving averages. However too many assumed that there was a pattern and gave incorrect answers of 12.25 and 11.75

In part (b) a range of acceptable answers were seen with many students scoring 1 mark

Question 16

Part (a) was done well by the majority of students as they could calculate the mean of the 8 numbers.

However part (b) was not done well with only about half of the students being able to work out the standard deviation correctly using the information given in the question. A range of incorrect methods was seen involving the working with combinations of the numbers given in the question.

Part (c) was answered better than in previous series, probably as ‘mean’ and ‘standard deviation’ were given on the answer lines. Many correct comparisons were seen.

Part (d) was answered well by the majority of students as 16.5 was identified correctly as the outlier.

Question 17

In part (a) the vast majority of students correctly identified the weight of a pig as continuous data. Common error was to state that this was discrete.

In part (b) many students identified the correct class interval that contained the median weight. The common error was $30 < w \leqslant 35$ which was the middle group and the modal class interval.

In part (c) many students were able to calculate a correct estimate of the mean weight. Some students lost marks as they did not use mid points and others divided by 5 which was the number of class intervals. The most common error seen was to add the frequencies and divide by 5

Question 18

Calculating and interpreting index numbers always seems to cause students issues on this paper and this series was no different.

Many students were unable to calculate the index and even those that did found the interpretation and comparison challenging. Those that could calculate it occasionally interpreted it but very few were able to give a correct comparison.

Question 19

This question was answered better than in previous serious and it was clear that students were able to calculate a weighted mean. Many students scored full marks. The most common error was to find the mean of the two given mean heights.

Summary

Based on their performance on this paper, students should:

- Read the question fully and carefully before attempting to answer them.
- Show working out to support the final answer.
- Be encouraged to use a ruler when drawing straight lines.
- To check the scale given in questions.
- Check that probabilities do not have values greater than 1
- Know how to calculate the standard deviation.

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