



Pearson

Examiners' Report Principal Examiner Feedback

January 2018

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

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Edexcel Award in Statistical Methods (AST20) Principal Examiner Feedback – Level 2

Introduction

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

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

Candidates are advised to use a ruler when drawing straight lines. Some candidates did not use a ruler to draw straight lines in questions 9a, 12b and 14b(ii).

Reports on Individual Questions

Question 1

In Part (a) the majority of candidates were also able to score full marks. Some candidates did not know how to complete the two way table.

In Part (b) generally the candidates wrote down the correct probability, however, a common error was to write $\frac{43}{100}$.

Question 2

This question was answered very well. Many candidates used ticks as requested to identify the correct answers.

Question 3

In part (a) was well answered and many candidates correctly identify the outlier.

In part (b) many candidates could work out the median of the discrete data given by clearly writing out the numbers in order. However, some candidates missed a number causing them to lose the final accuracy mark (A).

In part (c) many candidates found it difficult to work out the interquartile range as they did not order the numbers correctly or simply worked out the 4th and 12th number from the given list in the examination paper i.e. 63 – 22

Question 4

In part (a) the vast majority of candidates were able to describe the type of correlation contextually or correctly as negative.

In part (b) many candidates were able to draw an acceptable line of best fit.

Many candidates were able to give a correct response in part (c) including those that followed through from an incorrect line of best fit in part (b). Some candidates

lost the mark as they misinterpreted the scale on the y-axis.

Question 5

Many students were able to score both marks in part (a). Some candidates multiplied their probabilities. A common error was for candidates to use incorrect notation and give an answer of $\frac{0.44}{1}$.

Many students were able to three marks in part (b). However, some candidates did not divide 0.56 by 2 to obtain the correct answer. A common error was for students to use incorrect notation and give an answer of $\frac{0.28}{1}$.

Question 6

Part (a) was poorly attempted. Many candidates wrote down a question but missed out the time frame such as per month etc. Common incorrect answers here include overlapping intervals and no units. candidates should be discouraged from using ambiguous notation, such as '30+', in favour of words, e.g. 'more than 30'. Generally, questions designed for questionnaires should be fit for purpose and not require the detailed knowledge of mathematical notation.

In part (b) majority of the candidates answered this well.

In part (c), many candidates were unable to answer this correctly. Some candidates identified that the sample was biased. A few candidates tried to argue that this was a good sample.

Question 7

In part (a) was poorly attempted as candidates did not understand the idea of an experimental probability compared to a theoretical probability. Many candidates just simply compared the number of colours on the spinner.

In part (b) many candidates answered it well by showing the correct method and giving a correct answer of 70

Question 8

Part (a) was done well. Many candidates could write down the modal class interval.

Part (b) was done well. Most candidates were able to complete the cumulative frequency table correctly.

In part (c), some candidates drew their cumulative frequency diagrams to the mid interval values rather than the upper class boundaries. Some candidates ignored the scale on the horizontal axis and plotted the cumulative frequencies at 1cm intervals. Students should be reminded that they must join all the plotted points either by a curve or by straight lines.

Part (d) was not done well. A minority of the candidates answered this question correctly. Many candidates did not know how to find the median. A common error

was to find the median from the value of 70 rather than the value of 65

In part (e) many candidates could work out the number of pebbles that weigh less than 65 grams but did not subtract this value from 130. Some candidates subtracted this value from 140 which was a common error.

Question 9

In part (a) some candidates drew their frequency polygons at the upper class boundaries rather than at the mid interval values. Candidates should be advised that they are not expected to continue their frequency polygons beyond the lowest and highest mid interval values.

Part (b) was answered well by the majority of the candidates.

Part (c) was not done well. Some candidates were able to find an estimate of the mean from a grouped frequency table. Many candidates did not realise that they had to find the mid points of the class intervals in order to calculate the mean. Common incorrect answers here include dividing Σfx by 5 (rather than 80), dividing the sum of the mid interval values by 5 and to use end point rather than mid-point.

Question 10

In part (a), the majority of the students were able to calculate the required index number. Common errors in calculating the index number include $\frac{11000}{10600}$, i.e. omitting to multiply by 100, and $\frac{10600}{11000} \times 100$.

In part (b), the majority of the students were unable to give a complete interpretation of its value usually stating that the index number represented a decrease but not mentioning the percentage amount or missing out the percentage sign.

Question 11

A majority of the students were able to calculate the mean correctly, however, some students divided their Σfx by 4 instead of 60.

Question 12

Majority of the candidates could not identify the skew of the distribution of the times taken by the boys in part (a).

Part (b) was done well. Many candidates drew the box plot correctly.

Part (c) was not done well. Many candidates were not able to compare the medians, range or IQR and skews of the distributions correctly. Candidates should be reminded that they cannot simply state the values of the quartiles but must make a comparison.

Question 13

Many candidates answered this question very well giving clear and correct answers.

Question 14

Part (a) was poorly attempted and the majority of the students did not gain any marks. It was disappointing to see that students did not know how to calculate a moving average.

In part (b)(i) many candidates did not know how to plot moving averages correctly.

In part (b)(ii) the correct answer of 'upwards' was used by only a few candidates. 'Rising' or 'increasing' were the common answer given and whilst the marks were awarded centres should note that the correct answer should be that there is an upwards trend.

Question 15

Part (a) and (b) was answered very well by the majority of the candidates.

Question 16

This question was not done well. Most candidates did not appreciate that they were being asked to calculate a weighted or combined mean for the amount of pocket money received by boys and girls. By far the most common error here was to simply find the numerical average of the given amounts.

Question 17

Part (a) was not done well. A number of candidates were unable to label the second pair of branches correctly. Many candidates did not realise that the probabilities must add up to one for each pair of branches.

In parts (b) many candidates were able to find the required probabilities and give their answers in a suitable form usually as a decimal. By far the most common error here was to add the probabilities rather than multiply them. Candidates should be reminded to check that their probabilities do not have values greater than 1

Question 18

This question was done quite well and the majority of the candidates obtained the full marks. Some candidates left their answers as 13.0625 which only gained one mark.

Question 19

This question was poorly done. A minority of candidates were able to quote the required formula and calculate the standard deviation correctly. However, some were able to score a mark for calculating the mean. Majority of the candidates

were ill prepared and had no knowledge of how to calculate a standard deviation.

Question 20

Parts (a) and (b) were answered very well. It was encouraging to see many candidates understanding histograms and applying their knowledge correctly.

Summary

Based on their performance on this paper, candidates 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.
- Show their working by drawing a vertical line from the horizontal axis to their curve or straight line segment when interpreting cumulative frequency diagrams.
- Not be expected to continue their frequency polygon diagrams beyond the lowest and highest mid interval values.
- Check that probabilities do not have values greater than 1
- Know how to calculate the standard deviation.

