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Examiners' Report/ Principal Examiner Feedback

January 2014

Pearson Edexcel International A Level in Statistics S1 (WST01) Paper 01

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General introduction

The paper proved to be accessible to all candidates with questions 1–5 being answered very well. Those parts of questions requiring comments were often not answered well and questions 6–8 proved more challenging.

Comments on individual questions

Question 1

Part (a) was answered very well with most candidates scoring full marks. A small minority still thought that $\sum cs = \sum c \times \sum s$ but most candidates are well drilled in using these formulae. Most knew how to tackle part (b) too but a number lost the accuracy mark because their answer was not given to 3sf or better.

Part (c) caused problems for a number of candidates and often no attempt was seen. Whilst many could observe that the correlation was negative (or close to zero) interpreting this in the context of this question proved difficult with some candidates stating that because the correlation was negative Brad's decision was fine.

Question 2

Most candidates could find the mean correctly but a few struggled to establish the correct mid-points and others simply added their mid-points and divided by 7. A small minority thought that $\bar{x} = \frac{\sum fx^2}{\sum fx}$. There were many correct attempts at finding the median too but some errors with the class width were seen. The calculation of variance is still causing problems for some candidates who were not using a correct formula. Those who did have a correct approach often lost the accuracy mark because they were using a rounded value for their mean: candidates should be aware of the need to use their most accurate version of the mean to ensure that their final answer is accurate to 3 significant figures.

In part (b) some candidates simply stated that the coach was correct without giving any justification whilst some others commented that the mean or median had increased but did not state that this supported the coach's claim.

Question 3

A surprising number of errors were seen on the scatter diagram with candidates mis-interpreting the scales but most scored full marks for part (a).

Most gave a correct comment in part (b) but some simply stated that the relationship was "negative" and others added "skew" whilst a few thought the relationship was "inverse proportion".

Very few did not know how to tackle part (c) but once again accuracy marks were often lost with candidates using their rounded value for b to find their a. Some did not seem to appreciate that they had been given the means of t and p and divided these values by 8.

Part (d) was answered very well but again some candidates used their rounded values and lost the accuracy mark: the examiners expect the candidates to be able to work with sufficient figures to ensure that their final answers are accurate to at least 3 significant figures.

There were many correct comments in part (e) with most candidates realising that Jean's data would not be suitable since it involved extrapolation.

Question 4

Most candidates were able to establish 2 simultaneous equations and solve them correctly to show that $a = \frac{1}{20}$ and hence find the value for b. Some only found one equation (usually the one from E(X)) and rearranged this to obtain their second equation which they then tried to solve simultaneously.

A number of candidates were unsure what to do in part (b), they didn't seem to be familiar with the term cumulative distribution function but they were often able to answer part (c) correctly.

Some attempted to use the normal distribution to answer part (c) and gave an answer of $0.9938 = P(Z < 2.5)$.

Part (d) was answered well and many fully correct answers were seen.

Question 5

This probability question was answered much more successfully than question 7 but a large number of candidates were unable to draw a correct Venn diagram. The usual mistake was to simply draw 3 intersecting circles which could have been acceptable had they clearly marked the unwanted regions with zeros. Those who realised that Folk music was a subset of Rock music were usually able to complete part (a) correctly and often went on to score full marks.

Part (b) was often answered correctly although a common error was to give Folk music and Rock music as the mutually exclusive pair.

A few recovered from erroneous Venn diagrams to score in parts (c), (d) and (e) and some scored M1 in part (f) for using their incorrect values in a correct formula.

Question 6

Many candidates left this question out suggesting perhaps that they had not covered this important part of the specification? Those who did attempt it were often able to standardise correctly but 0.235 was frequently rounded to 0.23 and this led to an incorrect answer of 0.409.

There were many good attempts at parts (b) and (c) although some lost a mark in (b) for using a z value of 1.64 or 1.65 and failing to use the table of percentage points which would have given them the more accurate $z = 1.6449$. The other problem encountered here was ensuring that the signs were compatible and $\frac{1-\mu}{0.17} = 1.6449$ or $\frac{1-1.04}{\sigma} = 2.3263$ were common errors.

Question 7

This proved to be the most challenging question on the paper and there were a number of blank scripts. Many knew the correct formula for conditional probability in part (a) but could not find P($M \cap L$), a tree diagram would have helped them here.

In part (b) the common approach was to use a conditional probability (although an equation based on a tree diagram to find P(L) would have yielded the answer quite quickly) but a frequent error was to write $\frac{\frac{2}{5} \times \frac{3}{10}}{\frac{2}{5}}$ which scored 0.

Part (c) was often the only correctly answered part here with $0.6 \times (1 - 0.8)$ being a popular approach.

Some had the right idea in part (d) and gave 0.3×0.7 but they forgot to multiply by 2.

Question 8

There were many blank scripts here but those who did attempt it often managed to reach an answer of 34 for part (a) although their working was sometimes a little unclear.

Many candidates stopped at this point but those who had realised how to find the frequencies were often successful in parts (b) and (c).

In part (d) some mentioned that the data was skew whilst others mentioned that there were some extreme values and that this was a reason for choosing the median over the mean.

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