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Principal Examiner Feedback

Summer 2015

Pearson Edexcel Level 1 Award in Statistical Methods (AST10)

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Introduction

Most students attempted all the questions on the paper. The answers were generally written in the spaces provided. Many students did not show the intermediate stages in their calculations, even when explicitly asked to do so, specifically Q19a. Some students did not give their answers to the required degree of accuracy, particularly question 16a.

Reports on Individual Questions

Question 1

This question was generally done well. Most students were able to extract and use the information presented in the pictogram. In part (a) some students did not use the key to work out the number of pizzas sold on Monday, so that a common incorrect answer was 3. Similarly, a common incorrect answer in part (b) was Friday. In part (c), few students showed any working to show how they obtained their answers. A common incorrect answer was 60

Question 2

This question was generally done well. Most students were able to complete the frequency table correctly for both the males and the females in part (a) and then write down the gender with the greatest frequency (male) in part (b). Many students used tallies to complete the frequency table but did not then write down the frequencies.

Question 3

This question was generally done well. Most students were able to extract the required information from the table. In part (b), a common incorrect answer for the laptop with the largest RAM was Intel, presumably as a result of not realising that there are other Intels listed in the table. In part (c), a common incorrect answer was 11.6, i.e. the laptop with a hard drive memory of 0.5 Tb rather than 0.32 Tb.

Question 4

This question was generally done well. In part (a), most students were able to write down the required words to describe the likelihood of the given events. Common incorrect answers in (i) were definite and 100%. Part (b) was generally done well. Most students were able to mark their crosses in the required region of the probability scale. Common incorrect answers here were to mark the probability scale at 0 or at 0.5.

Question 5

This question was not done particularly well. In part (a) a significant number of students compared sectors within the pie charts rather than between the pie charts. A common incorrect answer here was “There are more males than females”. In part (b), many students did not appreciate that the sector for Chinese represents a quarter of the pie chart and that consequently a quarter of the females, ie 84 ÷ 4 was the required calculation. Again, a significant number of students did not show how they obtained their answers. A common incorrect answer was 28.

Question 6

This question was done quite well. In part (a), many students were able to explain why the spinner has a greater probability of landing on white than on black. Some students did not give an explicit comparison between the numbers of white sectors and black sectors on the spinner, e.g. “Yes, because there are 4 white and 3 black”, rather than e.g. “There are more whites than blacks”. Part (b) was done well. Most students were able to write down the probability that the spinner will land on black. A common incorrect answer here was $\frac{4}{7}$, i.e. the probability it will land on white.

Question 7

This question was generally done well. In part (a) most students were able to use tallies and complete the frequency table. In part (b) a significant number of students labelled their frequency axis by numbering the squares on the grid rather than the grid lines. Many of those students who chose a difficult scale for their frequency axis, e.g. 3 units per square, were unable to use these accurately to draw the bars accurately at the required heights.

Question 8

Part (a) was not done well. Few candidates were able to design a suitable data collection sheet to collect continuous data using class intervals. A common incorrect error was to use class intervals for discrete data. Students should be advised to label data collection sheets with the variable being collected, e.g. height, and how this should be done, e.g. tally. Part (b) was done quite well. Many students were able to find the median heights for the boys and for the girls and compare them correctly. Common incorrect answers were to compare the unordered middle of the data, i.e. 175 and 170, to find the median for all 10 data items listed together, and to find the medians but fail to compare them.

Question 9

This question was done quite well but a significant number of students did not appreciate they needed to enter the data for 70 males and 80 females as totals in the two-way table, many put these in the chocolate column. Students should be advised to check their answers to ensure that their totals columns and totals rows agree after completion of a two-way table.

Question 10

Part (a) was done quite well. A significant number of candidates did not separate outcomes using brackets. Students should be advised to use the notation suggested on the answer line. A relatively common answer was to give, e.g. (Heads, 1) and (1, Heads) as two separate outcomes. Part (b) was done quite well. Many students were able to use their outcomes in part (a) to write down the required probability. In part (b), many students were able to write down the probability for 3 heads or 3 tails, but relatively few were able to write down the probability for not getting 2 heads and 1 tail. A common incorrect answer here was $\frac{3}{8}$. Students should be advised to write probabilities as fractions, decimals and percentages, and not in words, e.g. “2 out of 8” or ratios.

Question 11

This question was done quite well. Many students were able to interpret the stem and leaf diagram for the required information. A common incorrect answer in part (a) was to add all the leaves for the total number of pancakes. In part (c), some candidates wrote the range in the form, e.g. “104 to 149”, rather than 45.

Question 12

Part (a) was done quite well with most students being able to score at least 1 mark for a correct explanation of why the question was not a good question. Students should be advised to be explicit when giving their reasons. Overlapping intervals should be identified explicitly, e.g. “6 is used twice”, and questions should not be answered with questions, e.g. the response “What if they don’t use a taxi?” does not explicitly identify the missing “0” in the response boxes. Part (b) was not done well. A common error here was 12, i.e. the frequency of the modal number. Part (c) was not done well. Relatively few students appreciated that they needed to calculate $\sum fx$, and many of those that did were often unable to do the calculation correctly, e.g. incorrectly calculating 3 × 0 as 3. Common incorrect answers here were 10 (from 1 + 1 + 2 + 3 + 4) and 30 (from 3 + 12 + 8 + 5 + 2).

Question 13

Parts (a) and (b) of this question were done well. Parts (c) and (d) were not done well. In part (c), relatively few students could interpret the time-series graph to find the temperatures at 0600 and 1800. Most of those that could, however, were usually able to score at least one mark for working out the difference between these temperatures. In part (d), many students plotted the temperature (−2) at 0000 on Monday rather than Tuesday, and few could make a sensible comment on the reliability of the prediction.

Question 14

This question was done quite well, many students were able to score at least two marks for identifying things that could be wrong or misleading with the dual bar chart. Here, as elsewhere, student responses were often vague or non-specific, e.g. “The numbers are wrong” or “What time is it?”. A common error was to give repeated responses, e.g. “No key” and “Don’t know which bars are Mary and Joe”.

Question 15

Part (a) was done quite well. Many students could describe the trend shown in the time-series graph. Candidates should be advised to use the correct word to describe trends, i.e. upwards or downwards or no trend. A common incorrect answer here was “goes up and down”. In part (b), only the better students appreciated that they were expected to calculate the total numbers of people for each of the years, many simply compared a single point value in each year, usually period 1. As in other questions, a significant number of students did not show any working for their calculations.

Question 16

This question was generally done well. In part (a), some students rounded their final answer to 11, apparently ignoring the demand to give their answer to 1 decimal place. In part (c), a significant number of students did not appreciate that the scales on the axes were different, often incorrectly misinterpreting the scale for the amount of rainfall. In part (d), most students were able to identify the correlation shown in the scatter graph as a positive correlation. A surprising number of students gave a dynamic description of the correlation, e.g. “as the amount of rainfall increases so does the number of hats sold”.

Question 17

Part (a) was done quite well. Many students added the given probabilities correctly for the final answer, but some went on to subtract this from 1. In part (b), a significant number of students thought incorrectly they were expected to subtract their answer to part (a) from 1. Students should be advised to retain the form of a probability given in a question and not convert it to a different form, in particular the decimal answer 0.55 need not be changed to the fraction $\frac{11}{20}$.

Question 18

This question was answered quite well. Many students were able to write down an estimate for the required probability and explain why this estimate is not reliable. A common incorrect answer in part (a) was $\frac{1}{6}$, presumably from

students not appreciating that the dice is biased. A common incorrect answer in part (b) was to explain that the estimate of the probability is unreliable because, e.g. “the dice is biased”.

Question 19

Part (a) was done quite well. Many students were able to calculate the required angle in the pie chart, but often there was insufficient evidence of a correct calculation. Part (b) was not done well. Few students were able to find an estimate for the number of games the team will win in 2015. A common incorrect answer here was 128, i.e. double, not one and a half, the number of wins in 2014.

Summary

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

- Label data collection sheets with the variable being collected
- Check their answers to ensure that their totals columns and totals rows agree after completion of a two-way table
- Write probabilities as fractions, decimals and percentages, and not in words or ratios
- Be explicit when giving their reasons
- Retain the form of a probability given in a question and not convert it to a different form in the answer

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