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Edexcel

Examiners' Report

Principal Examiner Feedback

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Pearson Edexcel GCE Advanced subsidiary Level
in Mathematics

Paper 21: Statistics (8MA0/21)

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Introduction

Sadly, there seemed to be some students who were simply unable to make any reasonable attempt at answering this paper. Many questions were simply left blank; others received only cursory attention. Those who had some preparation were able to attempt all the questions

Comments on individual questions

Question 1

This question proved to be quite difficult with the link between area and numbers of students eluding most candidates. Whilst some candidates managed to find the number of students required, they then made no effort at finding the percentage. Working was often confused and lacking organisation which led to many using a mix of "the number of squares in a bar" and "the frequency a bar represents" when finding the total number of students. The other main error was in calculating the heights of the 4 middle bars in terms of small squares. The heights are 8, 4, 12 and 3 but were often given as 10, 5, 15 and 4.

Question 2

It was clear from the responses seen here that many candidates have little or no experience with the large data set. In part (a) very few students knew that the figures for Daily Mean Visibility are in decametres (Dm). In part (d) a minority of students gave the correct variable hours of sunshine (just Sunshine was accepted) as the variable.

In part (b) most candidates who produced an answer were able to gain some marks. The most common mistake was to multiply the LQ by 3 in order to find the UQ. A few candidates calculated the upper boundary correctly, but then failed to make a comparison to finish off their reasoning.

In part (c) too many candidates simply wrote negative correlation. The demand interpret the correlation requires an explanation in context of what this means.

Question 3

There were some very good solutions given to this question with clear and organised working but there were many others with a correct statement lurking amid a pile of detritus. Candidates need to plan a course of action before writing numbers down. The most common error was to double the wrong set of probabilities, but there were still marks to be gained in further working. There were too many candidates who did not see the need to use the sum of probabilities as part of a solution. The candidates who reached the latter stages generally found the correct ways in which to obtain a total of 6. One of the more frequent errors in finding the total of 6 was think that there are two ways of arranging 3,3.

Question 4

In part (a) Q4 (a) very few candidates understood about sampling frames and that in order to take a stratified sample one needed to be able to produce a list of the fish.

In part (b) having been told that a stratified sample was not appropriate, it was slightly surprising that many chose such a sample here. There were very few fully correct answers, with most candidates who selected Quota sampling not mentioning the idea that fish are ignored once the quota for that fish is full.

In part (c) far too many candidates (over 35%) had little to no idea of what to do. Those candidates who knew how to calculate the standard deviation often carelessly lost a mark by giving inaccurate answers.

In part (d) it was very rare to see both parts answered correctly. Part(i) was answered the best, but even those who saw that the classes were important could not transfer this idea to the second part. Those candidates who realised the standard deviation will increase in (ii) were rarely able to give a good reason. Many simply stated the range increased but were unable to give an explanation as to why the range increased.

Question 5

This question required the binomial distribution and it was pleasing to see that around 65% of candidates were able to recognise the distribution required in part(a) with approximately 50% being able to work out the correct probability.

In part (b) few candidates recognised that there was a connection between parts (a) and (b) and that in order to do part(b) you need the answer to part (a). The most common error was using the distribution $B\left(45, \frac{1}{6}\right)$

Again in part (c) many candidates gave the correct model, but fewer were able to write down the hypotheses correctly. Of those who progressed to the end, most evaluated the required probability, but a not insubstantial minority worked out the probability of exactly eleven. The great majority of those who found the correct probability then went on to give the correct answer in context.