GCSE

STATISTICS

8382/1H: Paper 1 Higher
Report on the Examination

8382
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General

This was the second summer examination series for this specification. The vast majority of questions were attempted by most candidates but with varying degrees of success.

Topics that were covered in earlier papers were well answered with other topics e.g. stem and leaf diagrams and weighted mean proving more challenging.

A number of unnecessary marks were lost through students not reading the questions correctly as well as not writing down any working.

Question 1

This question was answered reasonably well with over half of candidates awarded the mark.

Question 2

This question was answered reasonably well with over half of candidates awarded the mark.

Question 3

Although the correct answer of $\frac{1}{3}$ was the most common response, this answer was given by a minority of candidates.

Question 4

This question was answered reasonably well with over half of candidates awarded the mark.

Question 5

Part (a) was answered very well. The most common answers given were 39.5 and 40.

For the first mark of (b) most candidates referred to the downward trend, negative correlation or stated that as age increased the pass rate fell. Responses not scoring often looked at a too small a range to show the trend e.g. 16 to 26 but 24 to 42 was sufficient.

For the second mark, common correct responses mentioned spikes in the data or specific references made to show that the statement was false e.g. there was a rise at 60+ , or compared 55 and 53 year olds. Incorrect responses came from misreading the graph such as between 16 and 18 (e.g. stating that the 18 year-olds had a better chance of passing).

The majority of candidates were awarded at least one mark with around half scoring both marks.

Question 6

This question was common to the foundation tier.

Part (a) performed well. The most common error seen was failing to label the newly added bars as 'female'.

For part (b), the change in the overall population or for males or females was well answered, less so was the comparison between the genders for 1851 and 1961

Question 7

This was common to the foundation tier.

Part (a)(i) was well answered. A common error seen, was not dividing the difference between 150 000 and 135 000 by 1 000 before multiplying by 0.05

Part (a)(ii) proved difficult for many candidates. The most common incorrect approach seen was to double rather than square their value to part (a)(i).

Part (a)(iii) also proved difficult for candidates. Candidates often referred to house price or to the risk changing for the second month. Few seemed to know the word 'independent' but some were able to state that the risk for each month did not change.

Part (b)(i) was reasonably well answered. Those candidates that realised that 20 lots of £1 000 were needed, coming from 1 ÷ 0.05, and added this £20 000 on usually gained full marks. A common error was using 10 ÷ 0.05 as a starting point .

Part (b)(ii) was reasonably answered. Some of the common correct answers gaining a mark were: the risk might change, it is only a prediction, it is only advice, exactly what someone wants and house prices might rise.

Question 8

This was common to the foundation tier.

Part (a) was not well answered. Many students gave the answer 'Consumer Price Index' which was not awarded a mark as the question asked what CPI measured.

Part (b) was well answered.

Part (c) saw the majority of students awarded a mark for stating that both private and public sector pay increased. Few then went on to successfully talk about public pay being higher and then being overtaken by the private sector.

Candidates could refer to the index values, percentage rise or pay (but not a specific amount of pay e.g. £18).

Part (d) proved challenging to most with less than 50% of candidates awarded a mark.

A common error was to notice a rise of 20 from 100 to 120 and then assuming that this meant a drop of 20 to 80 for the second part.

For those that did understand index values, marks were sometimes lost by reference to 83.3 rounding to 80 as the nearest whole number or by not indicating that the first statement was correct and the second one wrong.

Question 9

Part (a) was well answered. A common error was 'age of people…' being linked to 'qualitative',

Part (b) proved challenging to many candidates. The most frequently seen incorrect answers were: 'categorical', 'quantitative' and 'qualitative'.

Question 10

Part (a) was reasonably well answered with over 50% of candidates awarded full marks. The 0.8 and 0.2 branches were usually correct.

Incorrect responses had 0.76 on the set/arrive line with 0.24 underneath. Similarly forgets/arrive was often incorrectly filled in with 0.95 and 0.05.

At times incorrect values at the beginning of the tree diagram were followed through correctly to complete it. This meant that students could access the second part of this question.

Part (b) was well answered with a high proportion of candidates awarded full marks. The mark scheme allowed for all three marks to be awarded if candidates had a 'correct' answer for their tree diagram.

Question 11

Part (a) was very well answered. Most candidates correctly calculated the three required frequency densities but then some went on to plot them incorrectly. These candidates were awarded a total of two marks.

Part (b) proved to be very challenging. Many candidates correctly identified the group containing the median (or the fact that they needed to find the 50th or 50.5th value) but could not then calculate this value. These students were awarded one mark.

Part (c) proved difficult to many candidates. Common incorrect answers focussed on most of the delays occurred in the $0 < t \le 5$ interval, outside influences, skewed data or group sizes being different.

Question 12

Part (a) was answered fairly well. The most common correct answer used the halfway point at 105. Candidates could be awarded a mark for working with a wide range of values.

Part (b) saw the majority of students awarded at least one mark. At times -0.845 and 0.831 were given in reverse order which unfortunately was awarded no marks.

Part (c) proved very challenging to most candidates. Because the question asked candidates to explain their answers 'in context', referencing the strength and type of correlation without the context meant that a maximum of one mark could be awarded. Candidates were allowed to use their values from part (b).

Part (d) performed reasonably well, with the majority of candidates awarded at least one mark.

Most were able to gain a mark for correctly criticising the statement about 'being full for most of the day'. Common correct responses were: it was only full for three of the hours, only full between 12 and 2 pm or there were empty spaces for over 5 hours.

Fewer marks were awarded for criticising '… there are not enough car parks'. Responses awarded a mark commonly mentioned that this was only one carpark or only one day was surveyed.

Question 13

Part (a) proved challenging to many students. Common errors seen included: adding the marks and dividing by 3 and dividing the sum of the products by a number other than 120. Students who took the latter approach were awarded a single mark if they showed their method.

Part (b)(i) was very well answered.

Part (b)(ii) was fairly well answered. Most candidates were able to gain the mark as they realised that the highest standardised score was the best result.

Others referred to 'above the mean' or 'better than average' but failed to say it was the only one of the three and these were not awarded a mark.

Question 14

Part (a) was fairly well answered, with the majority of students awarded the mark.

Part (b) was very well answered. The majority of correct answers discussed bias or group sizes.

Part (c)(i) and (ii) were fairly well answered. The most common extraneous variables given were: age, gender, tiredness or background noise. A common error was to reference the type of music in part (c)(i). Candidates who correctly answered part (c)(i) usually gave a correct control measure.

Question 15

Part (a) was not well answered. Many incorrect answers failed to mention 'A-level' or 'maths'. An unexpectedly high number of candidates wrote a question rather than a statement.

Part (b) saw most candidates awarded at least one mark. The more common correct responses referred to sampling being easier to do, less time consuming or discussed the reliability of the data. Unfortunately some assigned these same characteristics to a census.

Part (c)(i) was fairly well answered with the majority of candidates awarded the mark. The most common correct response discussed missing data because of the sampling.

Part (c)(ii) was not well answered with a significant number of candidates not attempting this question. Rounding errors were the most common correct reason given. Common incorrect reasons were miscalculation and referencing sampling.

Part (d)(i) was not well answered with a significant number of candidates not attempting this question. Some diagrams had stems using 3 – 6 others 0.3 – 0.6, both of which could score full marks. Many candidates did not round the national data to 2s.f.

Shoab's side was often the only correct part but overall the data was not ordered (although this did not lose a mark).

The key was often missed and very rarely was a correct 'double sided' key seen.

Part (d)(ii) was not well answered with a significant number of candidates not attempting this question.

Many responses focussed on individual years or used the mean and range thus not gaining any marks. The requirement to draw a stem and leaf diagram was intended to prompt the use of the median and IQR. Of these last two the median was more likely to be correct from their data with few choosing to use the IQR. Again an unordered stem and leaf led to errors.

Very few were able to compare the overall trends by looking at the original data. Often this came from the stem and leaf and did not score.

Part (e) was not well answered with a significant number of candidates not attempting this question.

Many candidates failed to realise that Shoab's data was only for every other year or that only A*/A grades were looked at. Incorrect responses referred to: primary/secondary data, errors in calculations or the fact that the A* grade was not awarded before 2010.
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Mark Ranges and Award of Grades

Grade boundaries and cumulative percentage grades are available on the Results Statistics page of the AQA Website.