



Questions matter

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GCSE

Statistics

8382/2F Paper 2 Foundation

Report on the Examination

8382

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Summary

Overall performance compared to last year

Most students were able to access the majority of the low and low-medium demand questions and were rewarded for good use of mathematics and statistical knowledge demonstrated at different levels of ability. There was still a reasonable level of engagement at the top end of the paper.

Students should continue to be encouraged to show their full working and give comments and conclusions in context as much as possible. Presentation and setting out of working were sometimes poor and for some students their digits 4 & 9 or 1 & 7 were indistinguishable. When plotting points, students should be encouraged to use a cross instead of a dot.

Topics where students excelled

- Identifying an outlier on a scatter diagram
- Probability when rolling dice
- Interpreting a bar chart
- Reasoning, in context, why the data may be representative
- Creating a pictogram
- Explaining problems with a given data collection method
- Identifying correlation
- Shading a choropleth map

Topics where students struggled

- Creating a response section for a questionnaire
- Naming a sampling method
- Reading from a cumulative frequency diagram
- Interpreting Spearman's rank correlation coefficient
- Criticising the data on a scatter diagram
- Drawing a line of best fit through the double mean point
- Estimating the mean from grouped data
- Index numbers
- Improving choropleth map
- Naming an extraneous variable in context
- Moving averages

Individual questions

Question 1

Well answered.

Question 2

Well answered.

Question 3

Whilst the correct answer was the answer given the most, less than half of the cohort gave this answer.

Question 4

Almost two thirds of the students answered correctly.

Question 5

Parts a and b were very well answered. The most common error on the tally was to leave “action” blank, but this was not overly frequent.

Part c saw a lot of incomplete answers, although the majority of students started well. Most students chose to double 6 rather than halve 11, and quite a number forgot to make a conclusion. The most

successful students were those who converted $\frac{9}{32}$ to a decimal. Those who attempted percentages often forgot to change 0.25 to a percentage. Students who attempted to divide 32 by 9 were usually unable to attempt the comparable value.

Question 6

The correct answer, Apple pie, was rarely missed in part a, and part b was almost equally as well answered, with those who made addition errors usually having identified that there were 21 orders for cheesecake. The most common incorrect answer for part c usually involved students saying that Iona was wrong because people still ordered toffee pudding or that there were other desserts that only sold a few portions, but it was pleasing to see so many knowing that the issue was that the data was only for one day. In part d, it was common for students to try to rewrite the question, rather than offer a criticism. We accepted many variations of “it’s a leading question” but phrases such as “rude,” “personal,” “sarcastic” or “biased” needed additional explanation to score the mark. Students struggled in part dii to give both exhaustive and non-overlapping options. Students attempting to use inequality symbols were often unsuccessful.

Question 7

In part a, students were not able to identify the sampling method easily, with the most common answer being “stratified” or “random.” In the second part of the question, students were usually able to correctly identify one advantage, if not two. The standard answers of “quick” and “easy” were the simplest way to score the marks.

Part b was more successful for many students. Less successful students focused on the table totalling 53, rather than giving a reason for the difference. The pictogram in the second part of the question was very well done and the usual reason to lose a mark was when the alignment of symbols was too far adrift (re-attempts due to crossing out were not penalised); a pictogram does not work as a visual representation of data if the same amount of space is used for 4 symbols in one row but only 3 symbols in another row.

Question 8

Part a was very well attempted with lots spotting the pinpoint data sample, or that the census approach would result in an overload of data to process. The most common incorrect answer was related to the honesty of answers. Part bi showed that students could find the total number of visitors as cumulative, but they did not know how to find the missing frequency. Part bii showed a greater differentiation of marks with most students being able to at least plot the 3 given points, even if joining was usually absent. Inaccurate readings were the usual source of marks being lost in biii, and in biv students often found 50% on the x-axis instead of the y-axis to read off. A good proportion of students understood, contextually, how to efficiently source the required data. Asking restaurant staff or using till receipts were the most popular responses. The proportion of students who were unable to provide a satisfactory answer were focussing on finding an average amount spent or using a survey. Interpreting Spearman's rank correlation coefficient was the least well answered question on the paper. Students that attempted to give an answer mainly suggested that 82p was the average amount spent in the shop or that 82% of visitors visited the shop.

Question 9

Just fewer than half of the cohort were correctly able to identify the response variable in part a. The majority of answers to part b focused on criticising the graph rather than the data set or pinpointing a specific age rather than an age group. Although given, the information for the double mean point was often ignored, with students drawing on a line of best fit by eye. The negative correlation was well identified in part d. Students who did not have a line of best fit were not able to access the final mark on Q9 and that was the usual reason for not scoring here. Those who had some sort of graph were usually able to read off accurately.

Question 10

Part a was answered well. More than half the students were able to calculate the total number of people that had taken the test. Part c was less well answered with many students totalling the midpoints or dividing by 5 instead of the total found in part b. Answers as to why the answer to part c is only an estimate usually referred to rounding, rather than the use of midpoints or time intervals.

Question 11

Whilst a good number of students attempted part a, few had the knowledge of how to find an index number and fewer still showed enough working to be awarded full marks in a "show that" question. Lots of responses in part b referred to the price of gold varying but failed to explain that the price would need to drop below the price of 2019 in order for the index number to be less than 100.

Question 12

This question was the extended response question for the paper. The pie chart seemed to be a familiar sight and students were comfortable attempting the question. Sometimes a mark was lost due to premature rounding when calculating the new numbers of vehicles. Comparisons were needed in context, so those simply using inequality signs could score nothing beyond the first 3 marks, but we only needed comments such as "fewer petrol cars were sold in 2021 than in 2019", alongside the supporting values. Less successful students tried to make comparisons without calculating the new figures.

Question 13

Completing the choropleth map was usually well done with the occasional student misreading the key. Supporting and arguing against the given statement was fairly successful with roughly half of the students scoring at least 1 mark. Part c brought answers about recording which crops were sown, drawing new maps or finding ways to produce more crops, rather than concentrating on gaining greater detail from the existing style of map or making the suggestion to “complete the key,” referring to the gap between the least and most on the fertilizer choropleth map. A pleasing number of students could suggest an extraneous variable in context. The less successful students were still talking about amounts of crops and types of crop.

Question 14

Correct answers in fraction, decimal or percentage form were awarded the mark and incorrect simplification, or conversions were not penalised. This meant that the usual reason for not scoring was misreading the table in part a. In part b, the denominator was correctly identified more than the numerator. Students who started with $\frac{1882}{3272}$ did not usually finish off the rest of the method, so could only score the first mark. 116 was more often correctly placed as the numerator than 1370 as the denominator in the final part of the question.

Question 15

Students who ticked “Cannot tell” had the right reason, for the most part, in part a. Part b was not well answered by those who attempted it. Students who attempted to calculate the moving average often did not attempt the plotting and vice versa. It was not uncommon to see the four given moving averages being averaged for the missing value, or simply averaging the two figures directly above the box. Roughly a quarter of the students were able to score in part c, usually from plotting the given moving averages. It was rare to see a trend line attempted, students tended to join the plots one after another. The description of the trend was rarely given in context, although most students seemed to know that the trend was increasing. Less able students described the data week by week, instead of the overall trend of the data.

Mark Ranges and Award of Grades

Grade boundaries and cumulative percentage grades are available on the [Results Statistics](#) page of the AQA Website.