AQA

AS
STATISTICS

SS1B Statistics 1B
Report on the Examination

6380
June 17

Version: 1.0

Further copies of this Report are available from aqa.org.uk

General

Most students were adequately prepared for the standard topics involving requested calculations. However, parts of several questions proved to be very challenging to many students. These were usually where students were required to make decisions as to the appropriate methods of analysis or where comments and interpretations were needed.

Question 1

It was most disappointing to see the large proportion of students who attempted to calculate the mean and standard deviation or range in part (a) only to then almost repeat their work in part (b). As a result, marks of 0 and 3 were the norm.

Question 2

In part (a), too many students stated that $b = -0.57$ so ignoring the 9th bullet point of Instructions. It was also common to see the equation written as $y = a + (-b)x$ which was not penalised but should be dissuaded. The minority of careless students who stated that $b = 0.57$ lost 3 of the available 5 marks. The 1 mark in part (b)(i) was generally only scored by those with a correct equation. In part (b)(ii), there were many answers given which did not properly address the particular question being asked; for example,

- extrapolation
- small residuals
- small sample
- $r = -0.925$
- $y > 0$ when $x = 0$
- $y < 0$ when $x > 90$.

These all scored 0 marks.

Question 3

In part (a), the erroneous answers commonly seen were

(i) 0.274
(ii) 0.421
(iii) 0 or a calculation not resulting in 1
(iv) 0 $0.91924 - 0.57926$.

In part (b), few students used symmetry to state immediately that $\mu = 15$ and thus had only to solve an equation for σ. Much more common were the often unsuccessful attempts at solving a pair of simultaneous equations, some with $+1.96$ in both equations, others using values other than 1.96.

Question 4

Scoring full marks in part (a) proved beyond many students with common only-partially-correct answers of 0.56, 0.09, 0.65 or 0.65, 0.09, 0.65. However, part (b) was well attempted with many

students scoring full marks. The biggest challenge was the arithmetic in part (iv) as most students attempted $\mathrm{P}(2 \text{ late}) + \mathrm{P}(3 \text{ late})$ rather than the simpler 1 – (i) – (iii). A small minority of students added, rather than multiplied, the three probabilities and showed no signs of concern that their final probability was greater than 1.

Question 5

In part(a)(i), almost all students simply stated the correct answer but a dropping of the negative sign was sometimes seen. In part (a)(ii), the award of only 1 mark for "weak/little negative correlation" was the norm since statements usually made no reference to 'cars' and/or 'mileage mark-up'.

As expected, there were almost no errors in answers to part (b)(i). However, in part (b)(ii), a score of only 2 out of 4 marks was achieved for

- differentiating between petrol-engine cars and diesel-engine cars
- referencing 'actual fuel consumption' and 'mileage mark-up'.

Many students lost the other 2 marks for indicating:

- "moderate**ly strong** positive correlation' for petrol-engine cars;
- "**very** strong negative correlation' for diesel-engine cars.

Question 6

The extremely weak answers to part (a) revealed that most students did not have an adequate knowledge of the conditions necessary for using a binomial distribution. Very few students could identify:

R: No S: Yes T: No

and even those who stated "Yes" for S, then often gave values of $n = 10$ and $p = 0.5$.

Answers to part (b) showed that most students were able to determine binomial probabilities. Where marks were lost, it was usually in part (ii) for 0.4325 or 0.5675 and in part (iv) where the usual errors in inequalities often surfaced.

Question 7

Whilst stronger students usually scored full marks in part (a), some students were unable to find $\overline{x}$ and even more stated that s_X was equal to 12.48, $\sqrt{12.48}$ or $12.48/49$. These errors, sometimes coupled with an incorrect *z*-value, wrote off most, if not all, of the 6 marks available. Such misunderstandings also hampered part (b), which was essentially a part reverse of part (a). Often the best that was achieved was 1 mark for $z = 2.5758$ and sometimes 1 mark for $\overline{y} = 58$. Some students scoring full marks in part (a) were unable to find the value of s_Y from, for example, $58 + \dfrac{2.5758 s_Y}{\sqrt{36}} = 59.85$. Marks in part (c) were dependent on marks in parts (a) and (b). As a result, the best that was usually scored was 1 mark for a comparison of averages and, less frequently, 1 mark for a comparison of variabilities.

Use of statistics

Statistics used in this report may be taken from incomplete processing data. However, this data still gives a true account on how students have performed for each question.

Mark Ranges and Award of Grades

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

Converting Marks into UMS marks

Convert raw marks into Uniform Mark Scale (UMS) marks by using the link below.
UMS conversion calculator