Statistics Year 1 (AS) exam questions

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Ch. 1: Data Collection

June 2022 Question 3 (A-level)

A bit of the large data set in this question, but it has binomial, so you will find it in Chapter 6.

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November 2021 question 3

3. Helen is studying one of the qualitative variables from the large data set for Heathrow from 2015.

She started with the data from 3rd May and then took every 10th reading.

There were only 3 different outcomes with the following frequencies

Outcome	*A*	*B*	*C*
Frequency	16	2	1

(a) State the sampling technique Helen used.

(1)

(b) From your knowledge of the large data set

(i) suggest which variable was being studied,

(ii) state the name of outcome *A*.

(2)

George is also studying the same variable from the large data set for Heathrow from 2015. He started with the data from 5th May and then took every 10th reading and obtained the following

Outcome	*A*	*B*	*C*
Frequency	16	1	1

Helen and George decided they should examine all of the data for this variable for Heathrow from 2015 and obtained the following

Outcome	*A*	*B*	*C*
Frequency	155	26	3

(c) State what inference Helen and George could reliably make from their original samples about the outcomes of this variable at Heathrow, for the period covered by the large data set in 2015.

(1)

ANSWER

Qu	Scheme	Marks	AO
3. (a)	Systematic (sampling)	B1 **(1)**	1.2
(b)(i)	[Daily Mean] Wind Speed	B1	2.2a
(ii)	Light	B1 **(2)**	1.2
(c)	Variable *A* occurs most (around 80~90%) of the time	B1 **(1)** **(4 marks)**	2.2b

October 2020 question 2

It has correlation, so you will find it in chapter 4.

October 2020 question 4

It has questions about measures of location and spread, so you will find it in chapter 2.

June 2019 question 1

It has sampling and correlation, you will find it in chapter 4.

June 2019 question 4

It has ‘large data set’ and measures of location and spread, you will find it in chapter 2.

June 2018 Question 1 Paper 3 (A-Level)

1. Helen believes that the random variable C, representing cloud cover from the large data set, can be modelled by a discrete uniform distribution.

(a) Write down the probability distribution for C.

(2)

(b) Using this model, find the probability that cloud cover is less than 50%

(1)

Helen used all the data from the large data set for Hurn in 2015 and found that the proportion of days with cloud cover of less than 50% was 0.315

(c) Comment on the suitability of Helen's model in the light of this information.

(1)

(d) Suggest an appropriate refinement to Helen's model.

(1)

ANSWER

Qu 1	Scheme	Marks	AO
(a)	c: 0 1 2 3 4 5 6 7 8 $P(C=c)$: $\frac{1}{9}$ $\frac{1}{9}$ $\frac{1}{9}$ $\frac{1}{9}$ $\frac{1}{9}$ $\frac{1}{9}$ $\frac{1}{9}$ $\frac{1}{9}$ $\frac{1}{9}$	B1 B1ft (2)	1.2 1.2
(b)	$P(C<4)=\frac{4}{9}$ (accept 0.444 or better)	B1 (1)	3.4
(c)	Probability lower than expected suggests model is <u>not</u> good	B1ft (1)	3.5a
(d)	e.g. Cloud cover will vary from month to month and place to place So e.g. use a non-uniform distribution	B1 (1)	3.5c
		(5 marks)	