

Statistics
Advanced
PAPER 2: Statistical Inference

Wednesday 12 June 2024 – Afternoon

Data Booklet

THIS DATA BOOKLET **MUST** BE RETURNED WITH THE
ANSWER BOOKLET AT THE END OF THE EXAMINATION.

In the boxes below, write your name, centre number and candidate number.

Surname					
Other names					
Centre Number					
Candidate Number					

INSTRUCTIONS

There may be spare copies of some data sheets in case you need them.

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14	Question 3 – Table 2
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Indicate below your current level of eye fatigue by placing a cross on the line.

A score of 0 indicates no eye fatigue and a score of 10 indicates severe eye fatigue.



Question 1 – Table

Student	Score before yoga	Score after yoga
A	7·4	4·3
B	6·2	5·0
C	8·8	4·7
D	3·5	3·5
E	5·4	6·7
F	6·3	4·5
G	9·5	5·0
H	4·4	6·2
I	6·3	3·5
J	7·8	2·4
K	3·6	4·8
L	5·0	4·5

Question 2

In October 2021, just ahead of the COP26 UN Climate conference in Glasgow, 75% of adults, aged 18 years or over, in Great Britain agreed with the statement

“I am worried about the impact of climate change.”

Briony believed that, in Great Britain, a greater percentage of those aged under 18 were worried about the impact of climate change.

She set up an online survey with two questions.

Question A

Are you under 18?

Those who responded with a “no” to **Question A** could not continue with the survey.

Those who responded with a “yes” to **Question A** were then asked **Question B**.

Question B

Consider the statement

“I am worried about the impact of climate change.”

Do you agree or disagree with this statement?

Of the 312 responses for **Question B**, 63 DISAGREED with the statement.

Age category	Supermarket						
	A	B	C	D	E	Total	
	Student	15	3	2	1	2	23
	Young adult	11	6	1	3	1	22
	Older adult	14	7	5	3	1	30
	Retired	6	15	2	1	1	25
	Total	46	31	10	8	5	100

Age category	Supermarket						
	A	B	C	D	E	Total	
	Student	10•6	7•1	2•3		23	
	Young adult	10•1	6•8	2•2		22	
	Older adult	13•8	9•3	3•0		30	
	Retired	11•5	7•8	2•5		25	
	Total	46	31	10	8	5	100

Age category	Supermarket				
	A	B	Other	Total	
	Student	15	3	5	23
	Young adult	11	6	5	22
	Older adult	14	7	9	30
	Retired	6	15	4	25
	Total	46	31	23	100

Question 4

In recent years, there have been changes in the patterns of working of employees in businesses throughout the UK. In March **2024**, the Office for National Statistics published its latest findings from its ongoing Business Insights and Conditions Survey.

Daniel, a researcher in a local university, read the ONS findings and believed that, if larger and smaller businesses in Northern Ireland were surveyed separately, results would have been different.

To test his belief Daniel surveyed businesses with fewer than **100** employees and businesses with more than **100** employees.

In his sample, he questioned, **77** larger businesses with more than **100** employees and **64** smaller businesses with fewer than **100** employees.

Of the **77** larger businesses surveyed, **13** stated that they used or intended to use increased homeworking as a permanent business model going forward.

Of the **64** smaller businesses surveyed, **9** stated that they used or intended to use increased homeworking as a permanent business model going forward.

Question 5(c)

	Sweat reading (µg/dL)	Saliva reading (µg/dL)
A	3·74	6·24
B	3·47	6·31
C	2·58	6·41
D	4·12	6·66
E	3·97	6·72
F	4·33	6·81
G	4·67	7·02
H	4·68	7·12
I	4·51	7·13

Question 6

Regularly engaging in aerobic exercise is associated with improved asthma control and quality of life for people with mild asthma.

Adults with mild asthma are recommended to take part in exercise to improve their symptoms.

In 2020 a six-week study was conducted to see if high intensity interval training (HIIT) could improve mild asthma MORE than the usual recommended exercise.

Forty adults with mild asthma were randomly assigned to two groups.

The first group participated in a HIIT programme for 20 minutes, 3 times a week.

The second group continued with their usual recommended exercise.

After six weeks the VO2 max levels, the maximum amount of oxygen the body can use while exercising, of these adults, was recorded. This data is shown in the table below.

	VO2 max levels (ml/kg/min)		Number of adults
	Mean	Standard deviation	
HIIT programme	41.3	4.57	20
Usual exercise	39.0	4.41	20

A higher VO2 max level indicates improved asthma control.

A t-test for comparing the mean VO2 max levels was carried out and found to have a p-value of 0.0568

	A	B	C	D	E	F	G
	Customer_ref	Surname	First	Branch	Type_of_account	Asset_value (£)	Savings_account (£)
1							
2	1022564	Kelly	Nigel	Preston	Flex	312 458	18 210
3	1022565	Littler	Mark	Manchester	Fixed	256 874	34 116
4	1022566	Leng	Moira	Liverpool	High risk	303 451	26 415
5	1022567	Tang	Peter	Chester	Fixed	512 744	22 457
6	1022568	Prest	Heather	Manchester	Low risk	211 110	10 223

Question 7(b)

City	COUNT	SUM (£)	STDEV (£)
Liverpool	50	314 250	425
Manchester	42	268 800	511

Age category	Supermarket						
	A	B	C	D	E	Total	
	Student	10·6	7·1	2·3		23	
	Young adult	10·1	6·8	2·2		22	
	Older adult	13·8	9·3	3·0		30	
	Retired	11·5	7·8	2·5		25	
	Total	46	31	10	8	5	100

Sources

Question 2

[Source: Three—quarters of adults in Great Britain worry about climate change
Office for National Statistics (ons.gov.uk)]

Question 4

[Source: BICS Survey, www.ons.gov.uk]

Question 6

[Data source: Low volume high intensity interval training leads to improved asthma control in adults: Journal of Asthma: Vol 58, No 9 (tandfonline.com)]