



General Certificate of Secondary Education
2024

Centre Number

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Candidate Number

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Statistics

Unit 1 (With Calculator)

Foundation Tier



[GST11]

GST11

TUESDAY 11 JUNE, AFTERNOON

TIME

1 hour 30 minutes.

INSTRUCTIONS TO CANDIDATES

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.

You must answer the questions in the spaces provided.

Do not write outside the boxed area on each page or on blank pages.

Complete in black ink only. **Do not write with a gel pen.**

Questions which require drawing can be completed using an HB pencil.

Any working **must** be clearly shown in the spaces provided. Marks may be awarded for partially correct solutions.

Answer **all ten** questions.

INFORMATION FOR CANDIDATES

The total mark for this paper is 80.

Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.

You should have a calculator, ruler, compasses and protractor.

There is no formula sheet for this examination.



Answer **all** questions

- 1 The table below shows the results of a survey among some car owners about when they bought their car.

Season	Tally	Frequency
Spring		
Summer	/ / /	
Autumn	/	
Winter		

- (a) Complete the frequency column in the table above.

[1]

- (b) Complete the pictogram below to represent this data.

KEY ☺ represents 2 people

Spring	
Summer	
Autumn	
Winter	

[3]



Nina was going to use ✓ instead of 😊 in her pictogram as she said it was easier to draw.

- (c) Give a reason why it would not have been appropriate to use ✓ instead of 😊 in her pictogram.

[2]

[Turn over



2 Rosie has recorded some data about the children in her Drama Club.

Part of Rosie's spreadsheet is shown below.

	A	B	C
1	Hair colour	Eye colour	Height (metres)
2	Blonde	Blue	1.52
3	Brown	Blue	15.1
4	Red	Green	1.44
5	Black		1.56
6	Black	Green	1.32
7	Red	Blue	1.4
8	B	Grey	1.45
9	Brown	Blue	1.39
10	Black	Blue	1.42

Identify three problems with the data Rosie has collected.

1. _____
_____ [1]

2. _____
_____ [1]

3. _____
_____ [1]





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[Turn over

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3 Adam works at a car wash.

He records the times taken, in minutes, to wash 11 cars.

His results are as follows:

9 12 11 8 44 11 13 8 9 11 10

(a) Which one of the times is an outlier?

Answer _____ minutes [1]

The outlier is removed.

(b) Using the remaining 10 values, calculate the mean time taken by Adam to wash a car.

Answer _____ minutes [2]

(c) Show that the range of times taken by Adam to wash a car is 5 minutes.

[1]



Adam's brother Callum also works at the car wash.

The mean time taken by Callum to wash a car is 10.2 minutes and his range of times is 3 minutes.

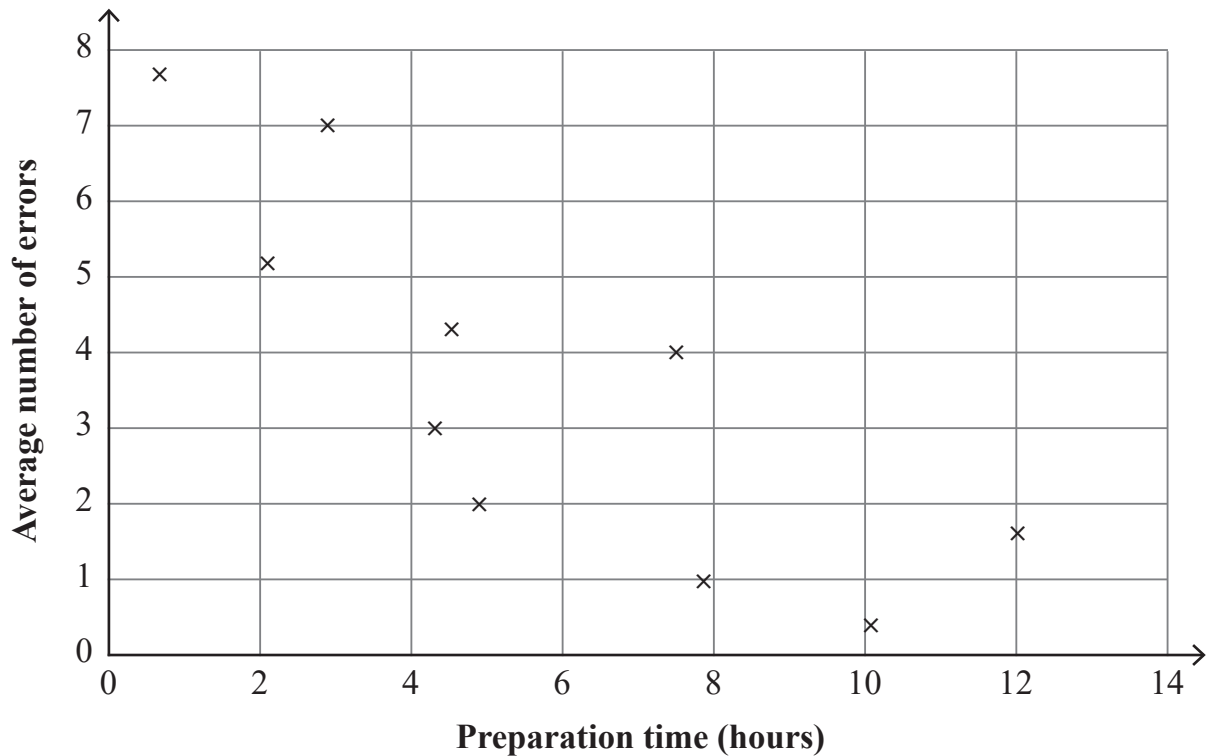
(d) Compare, in context, the values for the mean and range for Adam and Callum.

[4]

[Turn over



- 4 The diagram below illustrates the relationship between the time some people spent preparing for a test and the average number of errors they made.



- (a) Write down the name of this type of diagram.

_____ [1]

- (b) Which of the variables in the diagram is the explanatory variable?

_____ [1]

- (c) Describe the type of correlation shown in the diagram.

_____ [1]



(d) Which of the following terms describes the data shown in the diagram?

Circle your answer.

Univariate data

Bivariate data

[1]

(e) Which of the following is the most likely value of the product moment correlation coefficient for the data in the diagram?

Circle your answer.

- 0.820

0.671

0.104

- 0.029

[1]



- 5 As part of her GCSE Learning for Life and Work research, Janine is surveying some 15-year-olds about social media use.

She sends a questionnaire by email to students in her school.

One of the questions on her questionnaire is as follows:

How often do you use social media?

Yes A lot Quite a bit Regularly

- (a) Identify three issues with the question and the response section.

1. _____ [1]

2. _____ [1]

3. _____ [1]



Janine's teacher suggests that she might interview the students instead of sending a questionnaire by email.

(b) Apart from time, give two practical reasons why interviewing the students may be better than sending them a questionnaire.

1. _____

_____ [1]

2. _____

_____ [1]

[Turn over



6 Margaret is investigating whether train passengers are more likely to buy a single ticket or a return ticket.

(a) Write a hypothesis for Margaret's investigation.

[1]

Margaret did a survey among 24 passengers. She asked each of them whether the ticket they had was a single ticket (S) or a return ticket (R).

Her results are given below.

R	R	R	S	R	S
R	R	R	R	S	R
R	R	R	R	S	R
S	S	R	R	R	R

(b) Circle two words from the list below to describe the type of data Margaret has collected.

Primary	Continuous	Discrete
Secondary	Categorical	Bivariate

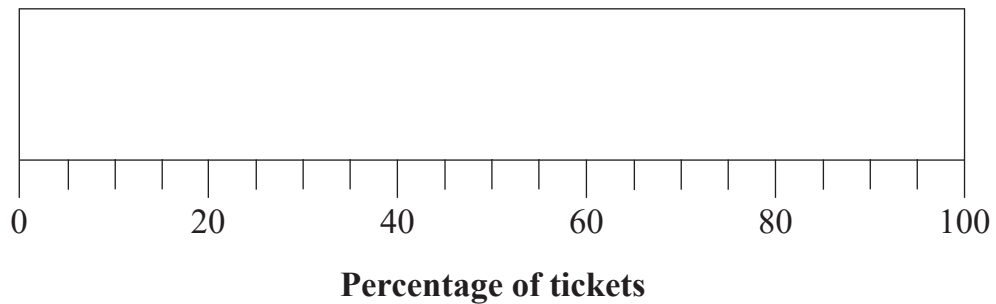
[2]

(c) Give a reason why Margaret might use a compound percentage bar chart rather than a simple bar chart to illustrate her results.

[2]



(d) Draw a horizontal compound percentage bar chart on the grid below to illustrate Margaret's results.



[3]

(e) What does your compound percentage bar chart show?

[1]

(f) What conclusion could Margaret draw from her survey?

[1]

[Turn over



Margaret did her survey at 6:30 am one morning at Portadown railway station among all 24 passengers waiting to board the train to Belfast.

(g) Identify the name of this method of sampling.

Circle your answer.

Cluster sampling

Simple random sampling

[1]

(h) Explain why Margaret's choice of sampling method may be biased.

[2]





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- 7 The two-way table below shows the number of flights departing from a large airport, how many were on time or delayed, and whether the flights were domestic or international flights.

	Domestic	International	TOTAL
On time	518		2779
Delayed		255	331
TOTAL	594		

(a) Complete the two-way table above. [3]

(b) Calculate the risk of an international flight being delayed.

Express your answer:

(i) as a decimal;

Answer _____ [2]

(ii) as a percentage;

Answer _____ [1]

(iii) in the form 1 in n , where n is a whole number.

Answer _____ [2]



Following the introduction of penalty charges, the risk of a delayed international flight reduces to 0.07

During the following month, 3141 international flights are due to depart.

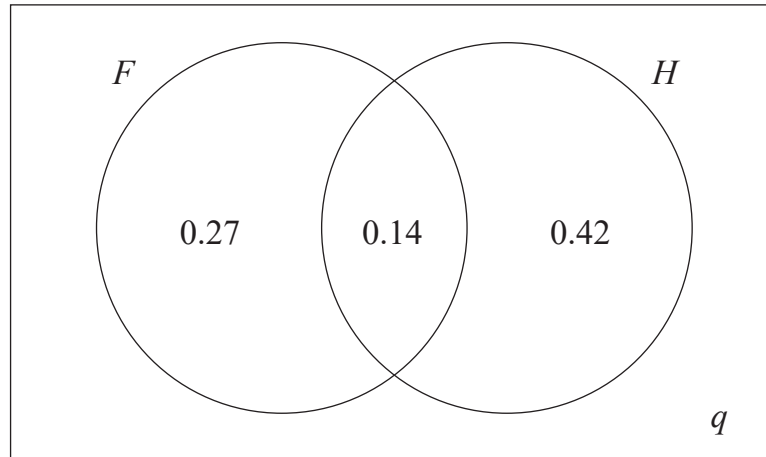
- (c) Use this information to estimate the number of international flights that will be delayed.

Answer _____ [3]



- 8 Employees of a large company can work either full-time (F) or part-time and can work from home (H) or at the office.

The Venn diagram shows some of the probabilities connected with this situation.



- (a) Find the value of the missing probability marked q in the Venn diagram.

Answer _____ [2]

- (b) Find the probability that an employee, selected at random, does not work full-time.

Answer _____ [2]

- (c) Explain what the number 0.14 in the diagram means in this context.

[2]



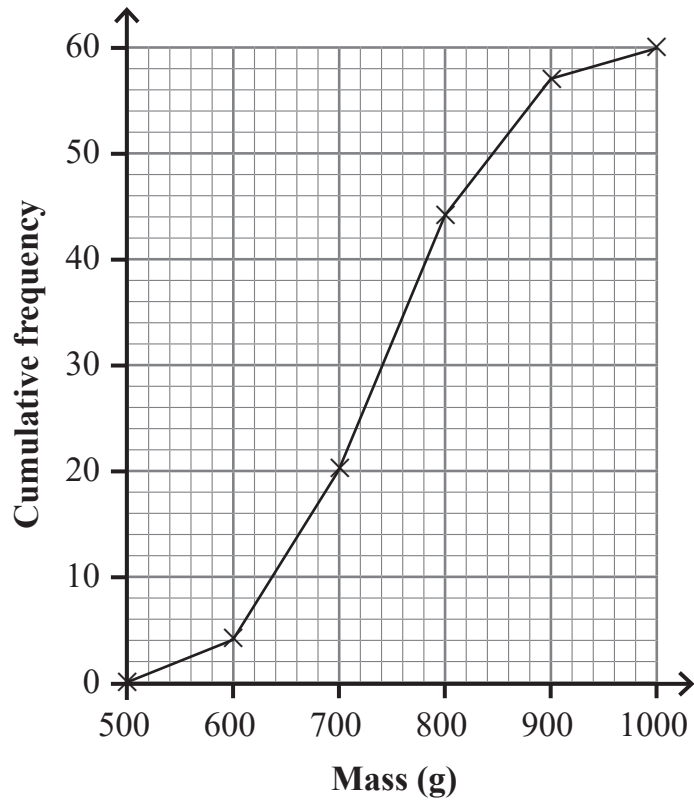
(d) In a sample of 150 employees, selected at random, how many would you expect to work from home?

Answer _____ [3]

[Turn over



- 9 Tom recorded the masses, in grams (g), of all the cabbages for sale at his stall.
His results are shown on the cumulative frequency diagram below.



- (a) How many cabbages are for sale at Tom's stall?

Answer _____ [1]



(b) From the cumulative frequency diagram, find:

(i) the median;

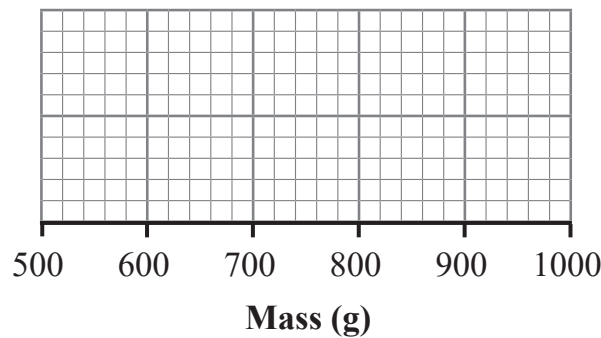
Answer _____ g [1]

(ii) the interquartile range.

Answer _____ g [2]

The lightest cabbage was 520 g and the range of the masses of the cabbages was 450 g.

(c) Use this information to draw a box plot on the grid below for the data in the cumulative frequency diagram.



[4]

Tom suggests that a normal distribution may be a suitable model for the masses of the cabbages at his stall.

(d) Comment on Tom's suggestion.

[2]

[Turn over



10 The table below shows the annual cost of a TV streaming service between 2018 and 2023

Taking 2018 as the base year, some of the index numbers have been calculated.

Year	2018	2019	2020	2021	2022	2023
Annual cost	£53	£56		£54	£55	
Index number		105.7	96.2		103.8	113.2

The annual cost of the streaming service for each year was obtained from the internet.

(a) Circle two words from the list below which describe this data.

Secondary Categorical Quantitative Primary

[2]

(b) (i) Did the cost of the streaming service increase or decrease between 2018 and 2020?

Tick the correct box.

Increase Decrease

[1]

(ii) Explain how this is shown in the table above.

[1]



(c) Find the annual cost of the streaming service for 2023

Answer £ _____ [3]

(d) Calculate the index number for 2021

Answer _____ [3]

THIS IS THE END OF THE QUESTION PAPER



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For Examiner's use only	
Question Number	Marks
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

Total Marks	
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Examiner Number

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