



General Certificate of Secondary Education  
2025

Centre Number

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Candidate Number

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# Statistics

## Unit 2 (With Calculator)

Foundation Tier



[GST21]

\*GST21\*

**THURSDAY 19 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 eight** 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.

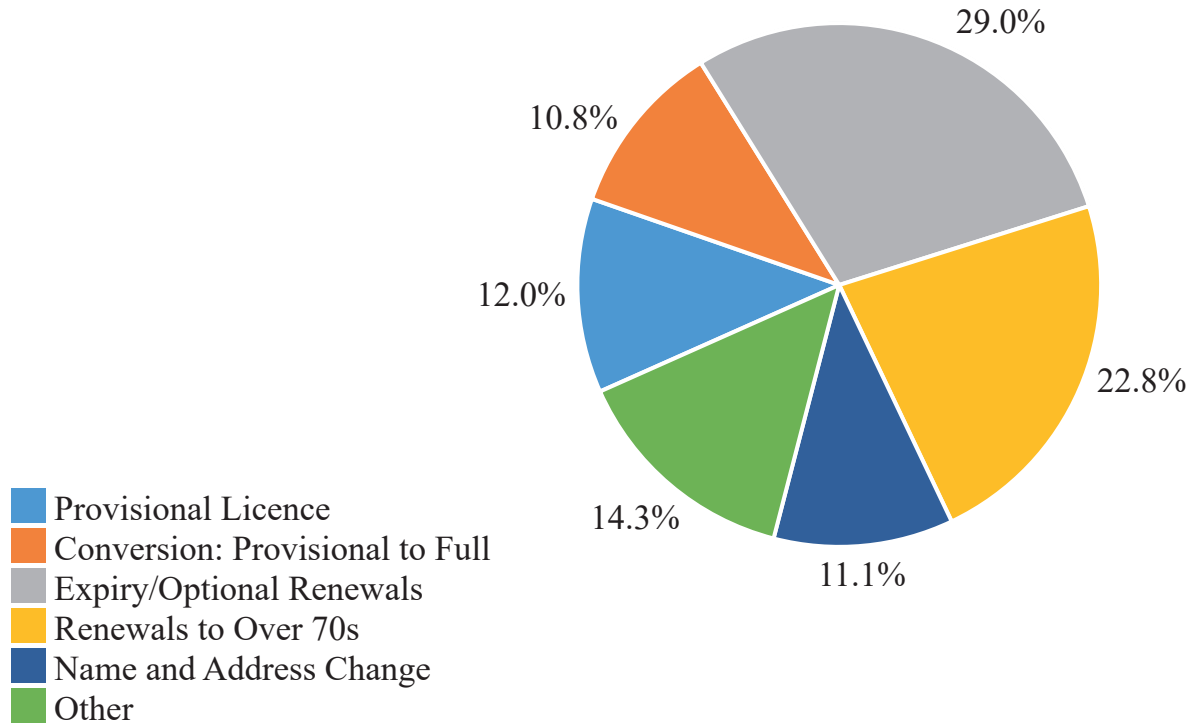
You should have a calculator, ruler, compasses and protractor.

There is no formula sheet for this examination.



Answer **all** questions

- 1 The pie chart below shows the proportions of ordinary driver licence transactions by type for Quarter 3 of 2022/23



- (a) Write down the percentage of transactions that were Name and Address changes.

Answer \_\_\_\_\_ % [1]

- (b) Which type of transaction was the mode?

\_\_\_\_\_ [1]



The total for two of the types of transaction accounted for the same proportion as Renewals to Over 70s.

(c) Write down the names of these two types of transaction.

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[1]

This pie chart came from a statistical bulletin which was published on the website of the Northern Ireland Statistics and Research Agency (NISRA).

(d) Suggest a reason why percentages for each type of transaction have been used on this pie chart instead of the sizes of the angles for each one.

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[1]



2 Molly is investigating whether older students at her school get more homework.

She writes what she thinks is a suitable hypothesis:

*Do older students get more homework?*

(a) Explain why Molly has made a mistake.

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[1]

(b) Suggest a more suitable hypothesis for Molly's investigation.

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[1]

Molly asks one person from each year group how many homeworks they got last week.

Her results are shown in the table below.

<b>Year group</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>
<b>Homeworks</b>	8	7	9	6	8

(c) Circle two words from the list below which describe the type of data Molly has collected.

**Secondary      Continuous      Primary      Discrete**

[2]



(d) Complete the pictogram below using the data from the table opposite.

Key: **H** = \_\_\_\_\_ homeworks

Year group	
8	
9	<b>H H H T</b>
10	
11	
12	

[3]

(e) What conclusion could you draw from Molly's data?

\_\_\_\_\_  
\_\_\_\_\_ [1]

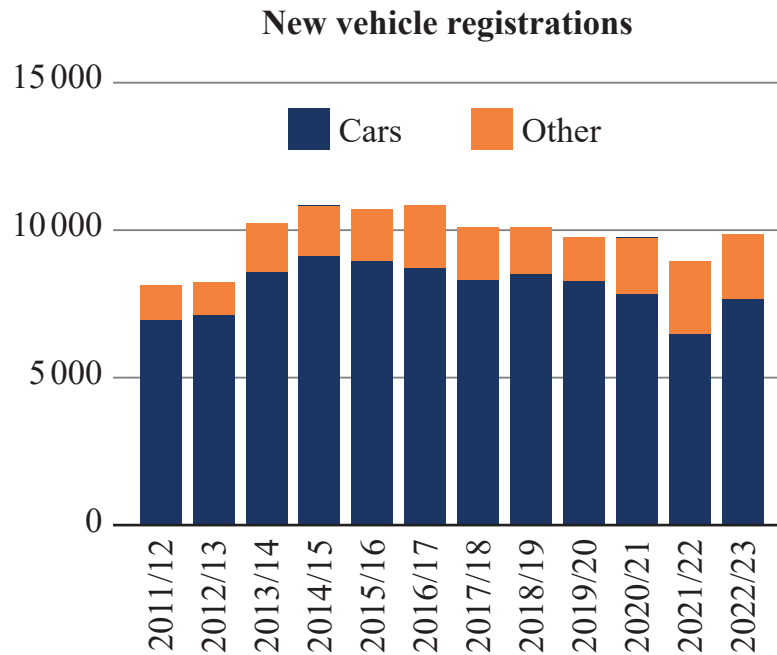
(f) How could the reliability of this conclusion be improved?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_ [1]

[Turn over



- 3 The chart below shows the number of new vehicle registrations in Northern Ireland in Quarter 3 between 2011/12 and 2022/23 for cars and other vehicles.



- (a) What is the name given to this type of bar chart?

Tick the correct box.

Compound bar chart

Multiple bar chart

[1]

- (b) Give one advantage and one disadvantage of displaying the data using this type of bar chart compared to having the blue and orange bars side by side.

Advantage \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_ [1]

Disadvantage \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_ [1]



Eddie uses the data in the bar chart opposite to estimate the mean number of new cars registered in Quarter 3 over the 12-year period to be 5000

(c) Comment on Eddie's estimate.

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[2]

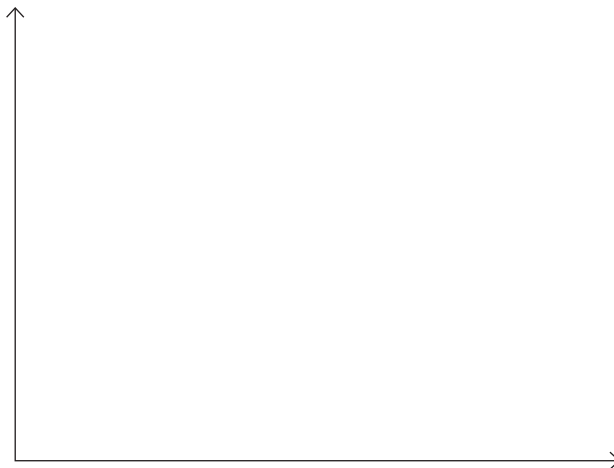
Eddie also suspects that there might be a positive correlation between the number of new cars registered during Quarter 3 each year and the number of other vehicles registered in the same period.

(d) (i) Name a suitable diagram which Eddie could use to investigate the correlation.

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[1]

(ii) On the axes below, sketch an example of what the diagram you named in part (d)(i) might look like if there actually is a positive correlation.



[2]

[Turn over



- 4 The table below shows the number of new car registrations by make and month for the last three months of 2022

Make	October	November	December
Ford	391	336	77
Volkswagen	239	304	164
Toyota	291	235	105
Hyundai	227	201	123
Vauxhall	199	210	128
BMW	213	146	89
Nissan	133	160	130
Renault	142	118	159
Kia	140	179	53
Audi	138	135	47
Škoda	102	106	85
Peugeot	122	116	47
Citroën	78	110	73
<b>Total</b>	<b>2415</b>	<b>2356</b>	<b>1280</b>

- (a) The table above shows that there were fewer total new cars registered in December than in October or November.

Suggest a reason for this.

\_\_\_\_\_ [1]  
\_\_\_\_\_

- (b) Write down the make of car which had more registrations in December than in October or November.

\_\_\_\_\_ [1]



- (c) The data in the table opposite is collected automatically when a new car is registered with the Driver and Vehicle Agency (DVA).

Name this method of data collection.

\_\_\_\_\_ [1]

- (d) Complete the table below for the number of new car registrations for the three months shown.

	October	November	December
Mean	185.8		
Range			117

[4]

- (e) Complete the sentences below using information from the table in part (d).

- (i) On average there were more new cars registered in

\_\_\_\_\_ because the mean for that month  
is \_\_\_\_\_ than the other two.

[2]

- (ii) There was \_\_\_\_\_ variation in the number of new cars registered in \_\_\_\_\_ because the \_\_\_\_\_ is smaller for that month than it is for the other two.

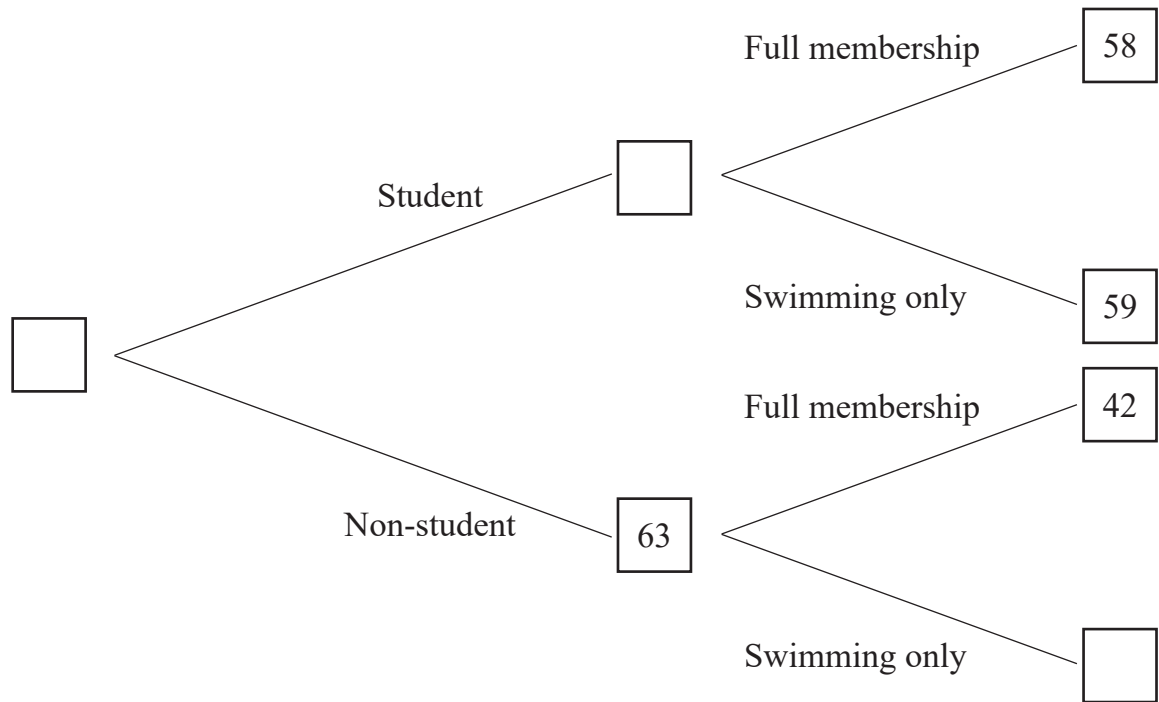
[3]

[Turn over



- 5 A leisure centre offers two types of membership: Full membership and Swimming only.

The frequency tree below shows the number of members who attended the leisure centre one Monday evening in January, whether they were students at the nearby university and the type of membership they had.



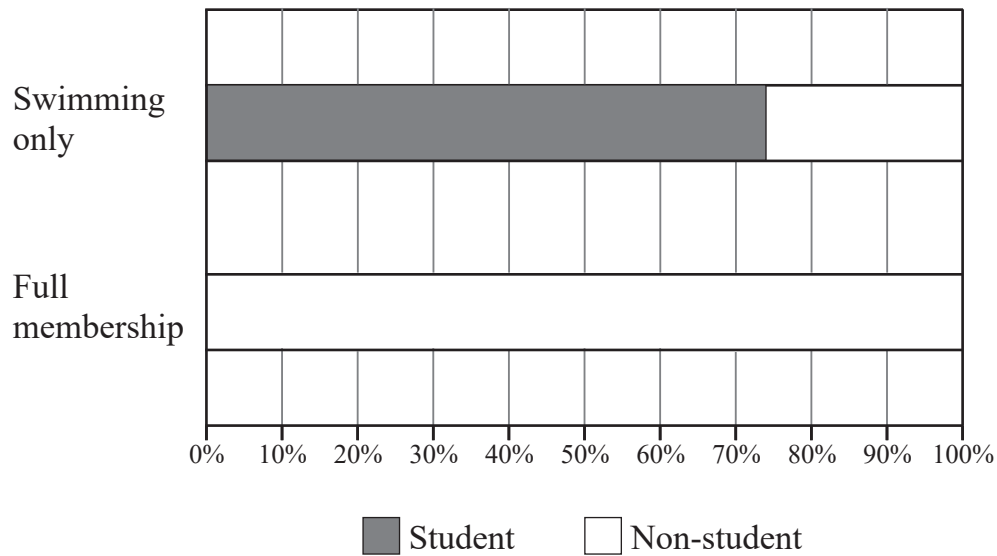
(a) Complete the frequency tree above. [3]

(b) How many users had Full membership?

Answer \_\_\_\_\_ [1]



(c) Use the data in the frequency tree to complete the chart below.



[2]

The leisure centre is located close to a university.

The manager offers a discount to students in February for Swimming only membership.

(d) (i) How will the above chart change for February if the discounted membership is popular?

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[1]

(ii) What assumption have you made about the non-student members in answering part (d)(i)?

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[1]

[Turn over



The manager is also interested in how often non-student members use the gym at the leisure centre.

He gives a paper questionnaire to all users of the leisure centre who arrive between 6:30 am and 7:00 am one Saturday morning.

One of the questions on the questionnaire is:

*Are there enough lifeguards at the swimming pool?*

Yes  No

(e) What is the problem with this question?

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[1]

(f) In the space below, write a question which the manager could use to get the information he wants.

Include a response section.

[3]



The manager notices that the response rate for his questionnaire is very low.

(g) Suggest two reasons why the response rate may have been low.

1. \_\_\_\_\_  
\_\_\_\_\_ [1]

2. \_\_\_\_\_  
\_\_\_\_\_ [1]

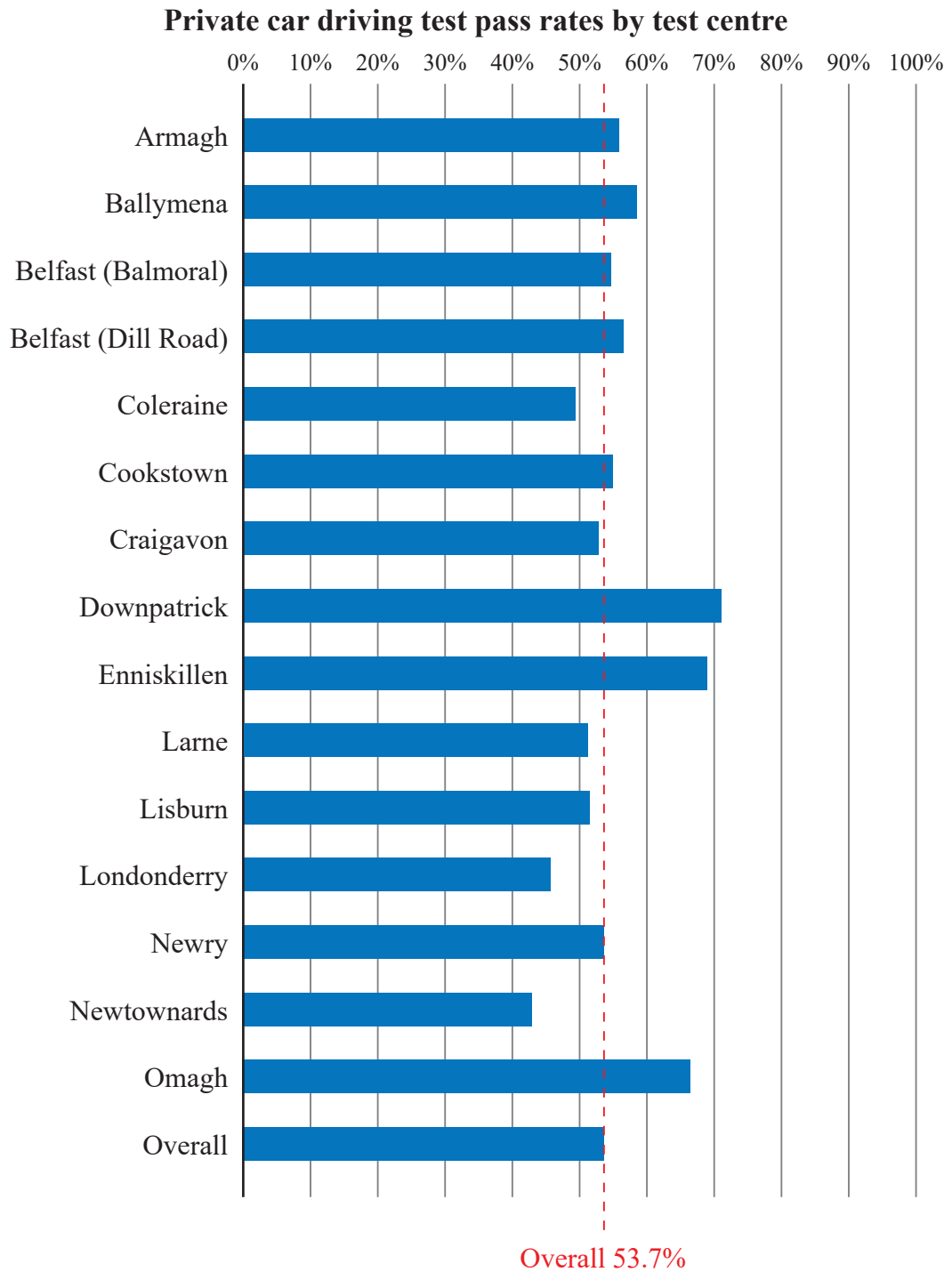
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14796.04 R



\*24GST2113\*

- 6 The chart below shows the pass rates for driving tests at the 15 test centres in Northern Ireland and the overall pass rate for a period of time.



(a) At how many test centres did fewer than half of those taking their driving test pass?

Answer \_\_\_\_\_ [1]

(b) What does the value 53.7% mean in relation to driving test pass rates?

\_\_\_\_\_  
\_\_\_\_\_ [1]

Elaine states:

*“More people passed their driving test in Downpatrick than anywhere else in Northern Ireland in this time period.”*

(c) Comment on Elaine’s statement.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_ [3]

[Turn over



The two-way table below displays some of the information on the driving test pass rates at the test centre in Armagh.

		Private cars		
		Male	Female	Total
Armagh	Conducted			488
	Fail		113	
	Pass	158	115	273
	Pass %		50.4%	55.9%

(d) Complete the two-way table above. [4]

One person who did their driving test in Armagh is selected at random.

(e) What is the probability that this person failed their driving test?

Answer \_\_\_\_\_ [1]

(f) Calculate the risk that a female driver fails her driving test, giving your answer correct to 3 decimal places.

Answer \_\_\_\_\_ [2]





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\*24GST2117\*

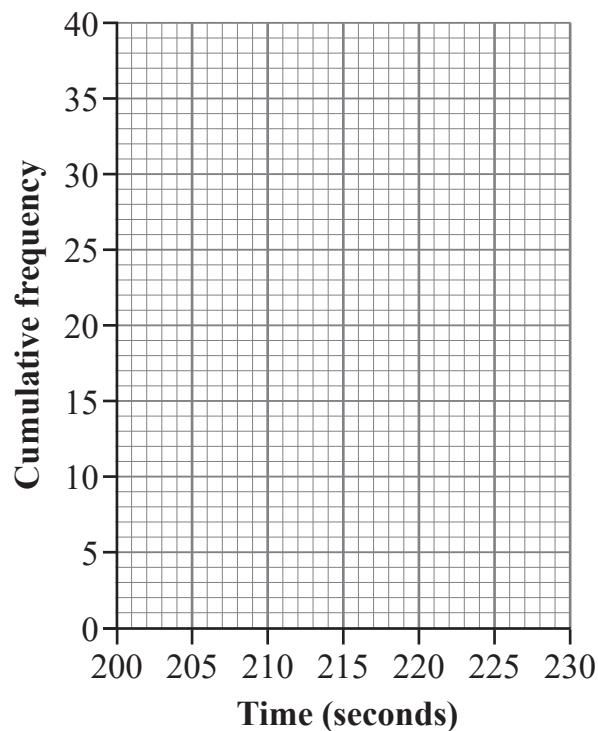
- 7 The times taken, in seconds, for some cyclists to complete a mountain bike course are recorded in the table below.

Time, $t$ (seconds)	Frequency	Cumulative frequency
$200 \leq t < 205$	6	
$205 \leq t < 210$	8	
$210 \leq t < 215$	9	
$215 \leq t < 220$	11	
$220 \leq t < 225$	4	
$225 \leq t < 230$	2	

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

[2]

(b) Plot a cumulative frequency diagram on the axes below.



[3]



(c) Use the cumulative frequency diagram opposite to estimate:

(i) the median time taken to complete the course;

Answer \_\_\_\_\_ seconds [1]

(ii) the interquartile range of the times taken to complete the course.

Answer \_\_\_\_\_ seconds [2]

To qualify for the final, cyclists must complete the course in 207 seconds or less.

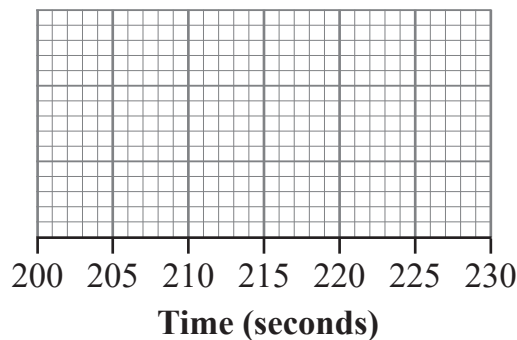
(d) Use the diagram opposite to estimate the number of cyclists who qualify for the final.

Answer \_\_\_\_\_ [1]

The winning time to complete the course was 201 seconds.

The range of times to complete the course was 25 seconds.

(e) Use this information to draw a box plot on the grid below for the times.



[4]

[Turn over



- (f) Use the box plot to suggest the name of a statistical distribution which could be used to model the times taken by these cyclists to complete the course.

Name of distribution \_\_\_\_\_ [1]

Explain your answer \_\_\_\_\_

\_\_\_\_\_ [1]





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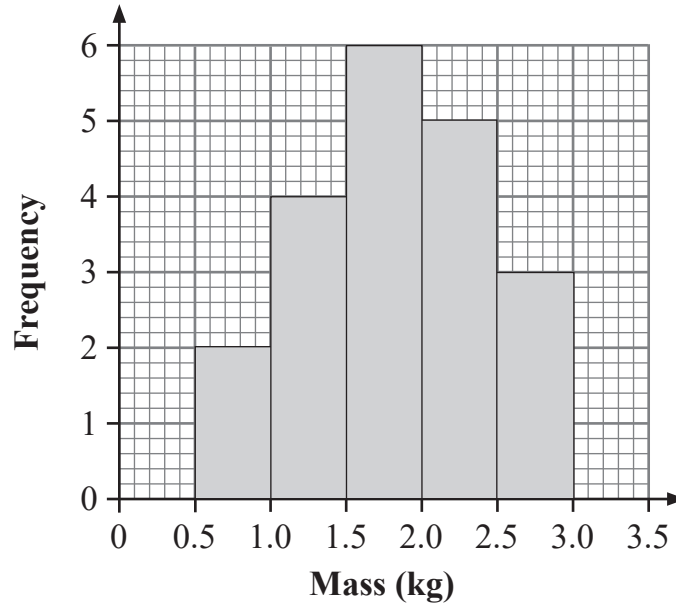
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\*24GST2121\*

- 8 A group of Year 12 students record the masses, in kg, of their revision files to compare who has the most revision notes.

The results are shown in the histogram below.



- (a) Calculate an estimate for the mean mass of the revision files.

You may use the table below to help you.

Mass (kg)	Frequency		

Answer \_\_\_\_\_ kg [4]



- (b) One of the students realises that they made a mistake in recording the mass of their file.

They recorded it as 2.04 kg, but it should have been 2.4 kg.

- (i) If this mistake is corrected, what effect will it have on the estimated mean?

\_\_\_\_\_ [1]

- (ii) Explain your answer.

\_\_\_\_\_  
\_\_\_\_\_ [1]

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**THIS IS THE END OF THE QUESTION PAPER**

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**Sources**

Q1, Q3, Q6.....Crown copyright / NIRSA <https://www.infrastructure-ni.gov.uk/sites/default/files/publications/infrastructure/dfi-driver-vehicle-operator-and-enforcement-statistics-2022-23-q4-report-july23.pdf>

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Question Number	Marks
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<b>Total Marks</b>	
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