



Please write clearly in block capitals.

Centre number

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Candidate number

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Surname

Forename(s)

Candidate signature

I declare this is my own work.

GCSE STATISTICS

F

Foundation Tier Paper 1

Monday 2 June 2025

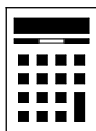
Morning

Time allowed: 1 hour 45 minutes

Materials

For this paper you must have:

- a calculator
- mathematical instruments.



Instructions

- Use black ink or black ball-point pen. Draw diagrams in pencil.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
- You must answer the questions in the spaces provided. Do not write outside the box around each page or on blank pages.
- If you need extra space for your answer(s), use the lined pages at the end of this book. Write the question number against your answer(s).
- Do all rough work in this book. Cross out any work you do not want to be marked.

Information

- The marks for questions are shown in brackets.
- The maximum mark for this paper is 80.
- You may ask for more answer paper and graph paper. These must be tagged securely to this answer booklet.

For Examiner's Use	
Question	Mark
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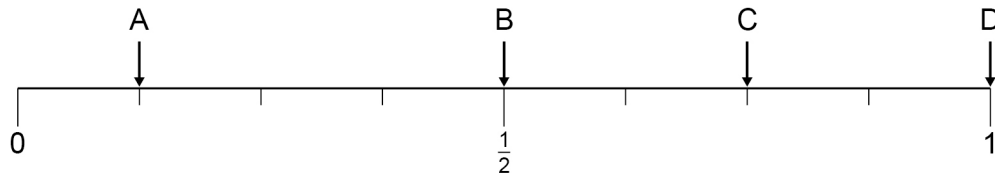
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Answer **all** questions in the spaces provided.

1 Here is a probability scale.



Here is a list of options.

more likely evens unlikely impossible certain less likely

Write the correct option from the list in each space.

1 (a) The chance of event **A** happening is _____.

[1 mark]

1 (b) The chance of event **B** happening is _____.

[1 mark]

1 (c) Compared to event **B**, event **C** is _____ to happen.

[1 mark]

1 (d) Event **D** is _____ to happen.

[1 mark]

4



2 Here is a tally chart.

Age (years)	Tally	Frequency
0 to 8		5
9 to 14		9
16 and older		4
		Total = 20

Write down **three** errors in the tally chart.

[3 marks]

Error 1 _____

Error 2 _____

Error 3 _____

3

3 Work out the mean of these numbers.

8 12 16 17 17

[2 marks]

Answer _____

2



4 Jess bakes five types of cake,

- Chocolate
- Vanilla
- Lemon
- Fruit
- Toffee.

4 (a) Jess asks some friends,

“Which of these cakes is your favourite?”

What type of data is Jess collecting?

[1 mark]

Answer _____

4 (b) The pictogram shows the results for chocolate, vanilla and lemon.

Key:  represents 2 friends

Chocolate	     
Vanilla	  
Lemon	 
Fruit	
Toffee	

4 (b) (i) How many friends chose lemon?

[1 mark]

Answer _____

4 (b) (ii) How many **more** friends chose chocolate than vanilla?

[2 marks]

Answer _____

4 (c) Jess asked a total of 32 friends.
Twice as many friends chose toffee as fruit.

Complete the pictogram.

[3 marks]

4 (d) Jess says,

“According to these data, the most popular cake will always be chocolate.”

Give one reason why Jess may **not** be correct.

[1 mark]



- 5 Taal wants to be elected to the school council.
Taal writes a survey including the question,

“Will you vote for me?”

Design a suitable response section for this question.

You must use **all three** response boxes.

[2 marks]

2



- 6** Alvin lives in town **A** and Ben lives in town **B**.
They want to investigate if there is a difference in the number of vehicles per household in the two towns.

- 6 (a)** Write down a hypothesis that Alvin and Ben can use.

[1 mark]

- 6 (b)** To collect his data, Alvin asks every third person who makes a purchase at a garage in town **A**.

- 6 (b) (i)** Write down the type of sampling Alvin is using.

[1 mark]

Answer _____

- 6 (b) (ii)** Give a reason why this data collection method might lead to biased data for this investigation.

[1 mark]

Question 6 continues on the next page



- 6 (c)** To collect his data, Ben posts a questionnaire to every house in town **B**.
He asks for the completed questionnaires to be put in a box at the local supermarket.

- 6 (c) (i)** Write down **one** possible issue with Ben's data collection method.

[1 mark]

- 6 (c) (ii)** Suggest **one** way to reduce the effect of the issue identified in **part (c)(i)**.

[1 mark]



Question 6 continues on the next page

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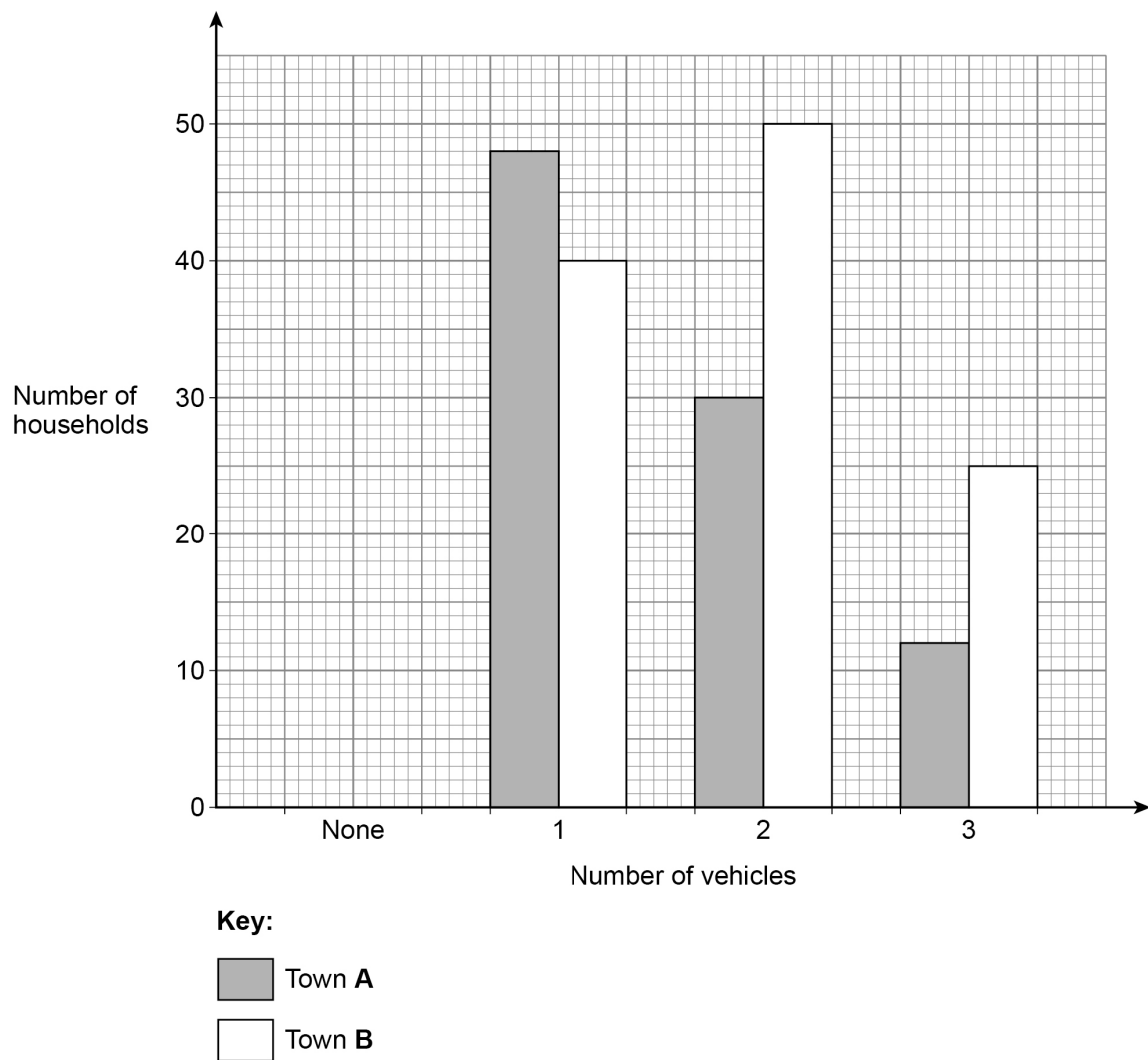
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ANSWER IN THE SPACES PROVIDED**



0 9

Turn over ►

6 (d) The dual bar chart shows some of the data.



Here are the rest of the data.

	Town A	Town B
Number of households with no vehicle	25	13

Use these data to complete the dual bar chart.

[2 marks]



- 6 (e)** Show that data was collected from more households in town **B** than in town **A**.

[2 marks]

- 6 (f)** Use the bar chart to decide if each statement is true or false, or if you cannot tell.

- 6 (f) (i)** 'The most common answer for town **B** was one vehicle.'

Tick (✓) a box.

True

☐

False

☐

Cannot tell

☐

Give a reason for your answer.

[1 mark]

- 6 (f) (ii)** 'There are more households in town **B** with 4 vehicles than in town **A**.'

Tick (✓) a box.

True

☐

False

☐

Cannot tell

☐

Give a reason for your answer.

[1 mark]

Question 6 continues on the next page



Alvin and Ben find these data online for the cities, Doncaster and Manchester.

Number of vehicles in household	Frequency	
	Doncaster	Manchester
0	32 560	83 770
1	55 681	92 267
2	34 412	31 611
3 or more	10 827	7 084
	133 480	214 732

Source: Adapted from Car or van availability - Office for National Statistics (ons.gov.uk)

6 (g) (i) Which city has the **smaller proportion** of households with no vehicles?

Doncaster

Manchester

You **must** show your working.

[3 marks]

6 (g) (ii) Suggest **one** possible reason for your finding in part **(g)(i)**.

[1 mark]



7

Draw a line from each description on the left to the type of data on the right.

[3 marks]

The number of cups of tea you
drink in a day

Continuous

How long you leave the tea
bag in the cup

Discrete

The colour of the tea and the amount of
milk in the tea

Bivariate

Qualitative

3**Turn over for the next question**

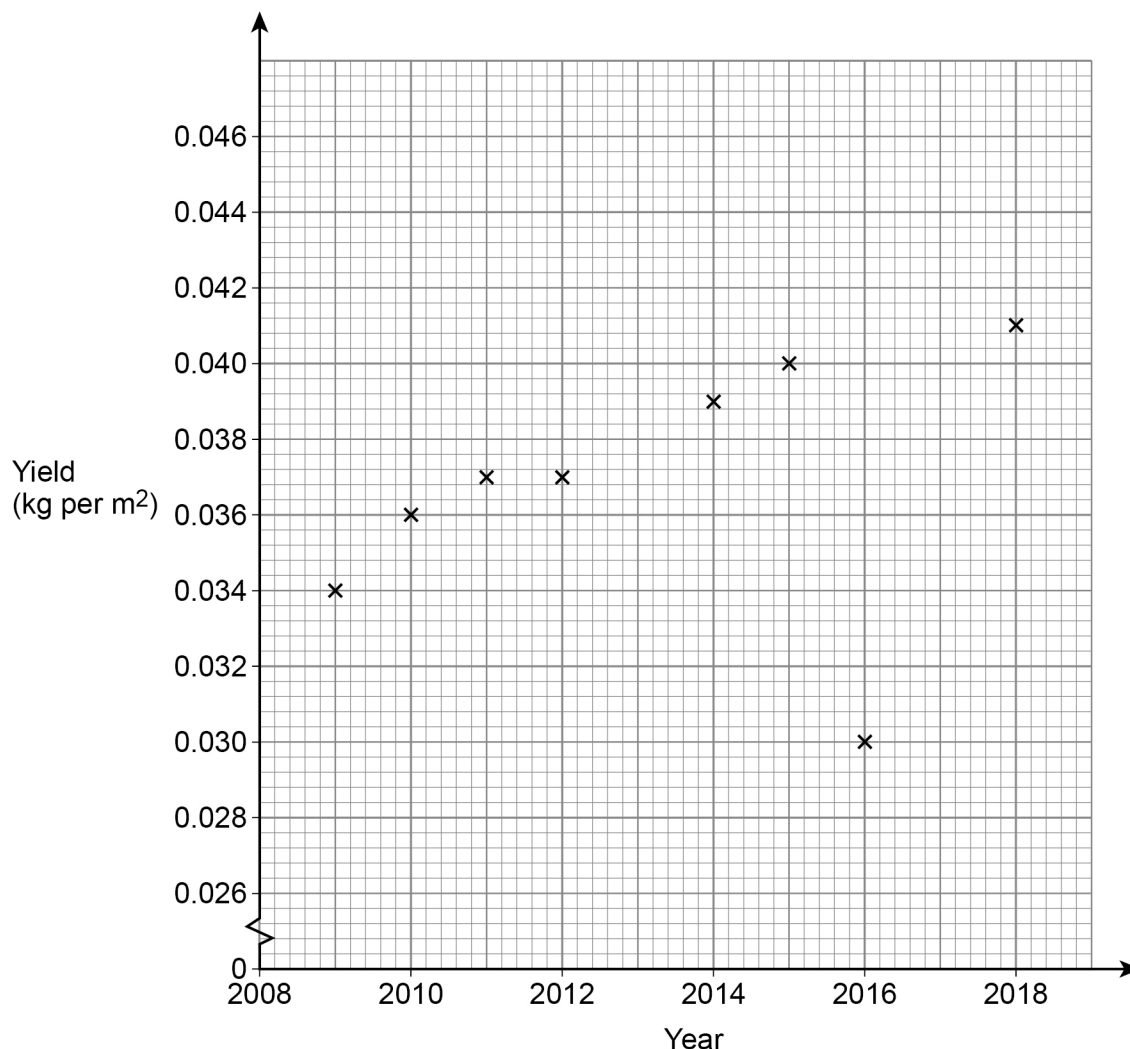
8

Jez is investigating cocoa production in Brazil.

The yield measures the amount of cocoa (kg) produced per square metre.

The **bigger** the yield, the **more** cocoa (kg) is produced per square metre.

The diagram shows information on cocoa production in Brazil.



Source: Crop Yields - Our World in Data

8 (a) (i) Circle the outlier.

[1 mark]

8 (a) (ii) Explain briefly how you decided this point was an outlier.

You do **not** need to complete any calculations.

[1 mark]



- 8 (b) In context, comment on any correlation shown in the diagram.

[1 mark]

- 8 (c) (i) By eye, draw an appropriate line of best fit for these data.

[1 mark]

- 8 (c) (ii) Using your line of best fit, estimate the difference between the yields of 2013 and 2017.

You **must** show your working.

[3 marks]

Answer _____ kg/m²

- 8 (d) Give one reason why Jez should **not** use this information to estimate the yield of cocoa in Brazil in 2020.

[1 mark]

Question 8 continues on the next page



8 (e) Jez says,

“I will now investigate if the average temperature in Brazil each year affects the yield of cocoa.”

8 (e) (i) Write down the explanatory variable in this investigation.

[1 mark]

Answer _____

8 (e) (ii) Write down **one** possible extraneous variable in this investigation.

[1 mark]

Answer _____

10



- 9 Here is information about the heights of 25 sunflowers.

Height, h , centimetres	Frequency
$0 \leq h < 80$	9
$80 \leq h < 160$	12
$160 \leq h < 240$	4

Write down **one** reason why a histogram is a suitable diagram to represent these data.

[1 mark]

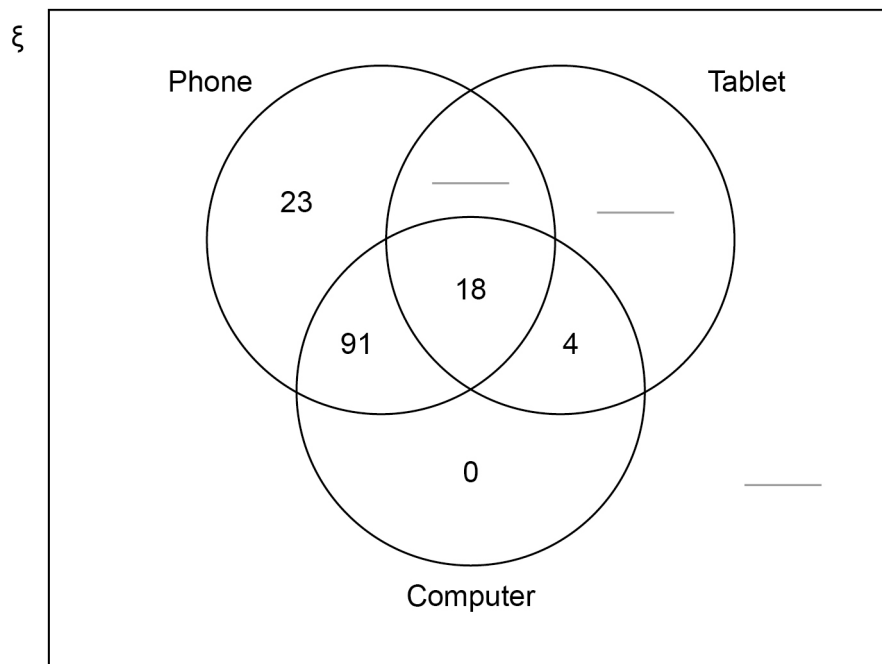
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Turn over for the next question



10 Ina asks a group of people about the devices they own.

The Venn diagram shows information about the number of people who own each type of device.



- 10 (a)** 3 people own **only** a tablet.
 157 people own a phone.
 170 people are asked in total.
 Complete the diagram.

[3 marks]

10 (b) Ina says,

“More than 65% of the 170 people own a computer.”

Show that Ina is correct.

[3 marks]

10 (c) One person is chosen at random.

Work out the probability this person has a phone **and** a tablet **and** a computer.

[1 mark]

Answer _____

10 (d) One person who has a phone is chosen at random.

Work out the probability this person has **at least** one other device.

[2 marks]

Answer _____

9

Turn over for the next question



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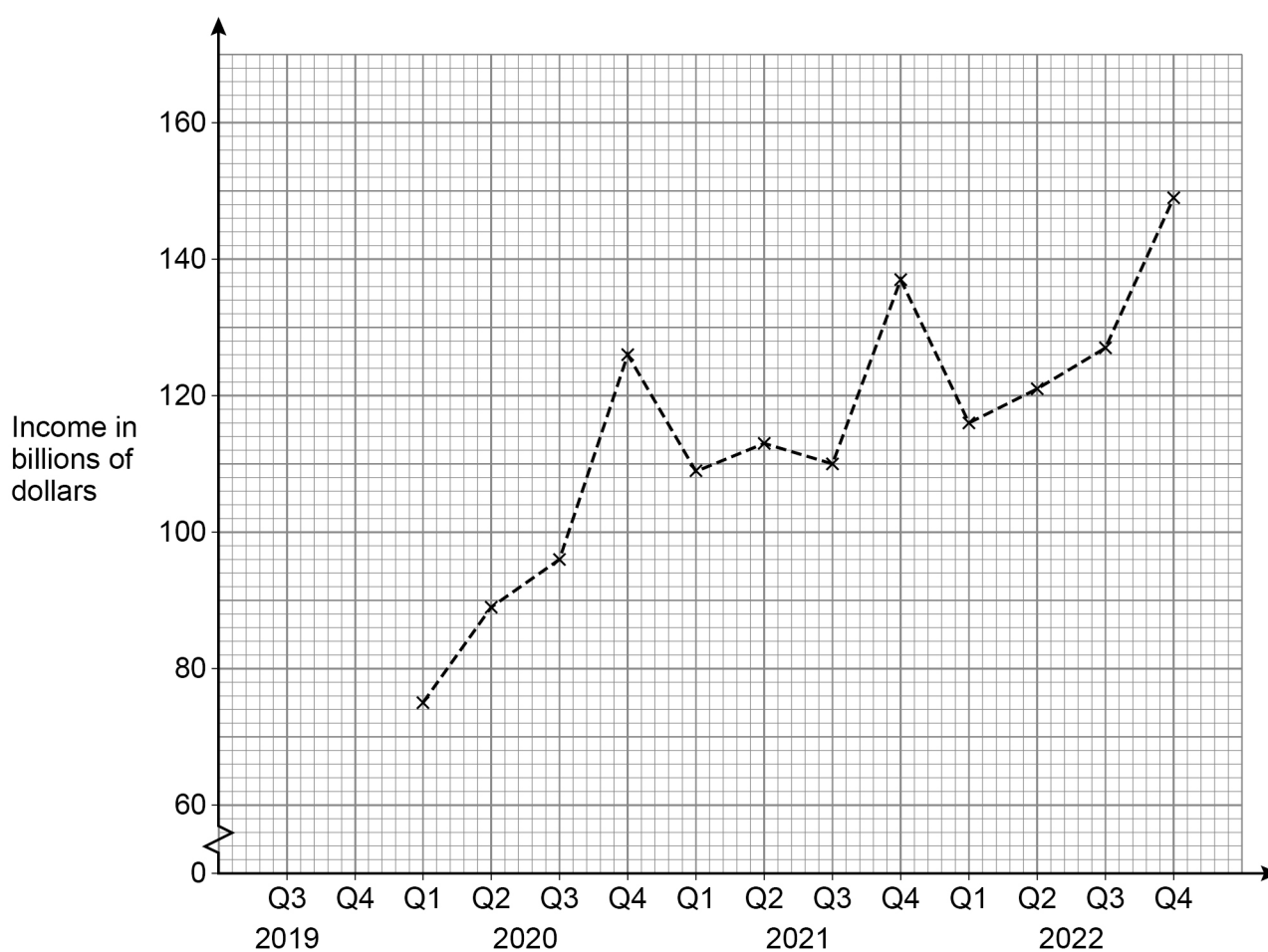
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11

The time series graph shows Amazon's quarterly income in billions of dollars.



Source – adapted from www.macrotrends.net

11 (a) Make **two** comments about the patterns in the data.

[2 marks]

Comment 1 _____

Comment 2 _____

Question 11 continues on the next page



11 (b) This table shows the data used to draw the time series graph.

It also shows some of the 4-point moving averages.

Year	Quarter	Income in billions of dollars	4-point moving average (nearest billion)
2019	4		
2020	1	75	
	2	89	87
	3	96	97
	4	126	105
			111
2021	1	109	115
	2	113	117
	3	110	119
	4	137	121
			125
2022	1	116	
	2	121	
	3	127	
	4	149	

Source – adapted from www.macrotrends.net

11 (b) (i) Calculate the missing 4-point moving average.

Round your answer to the nearest billion.

[3 marks]

Answer _____ billion dollars



11 (b) (ii) Bob says,

“The Quarter 4 income for 2019 is greater than 97 billion dollars.”

Is Bob correct?

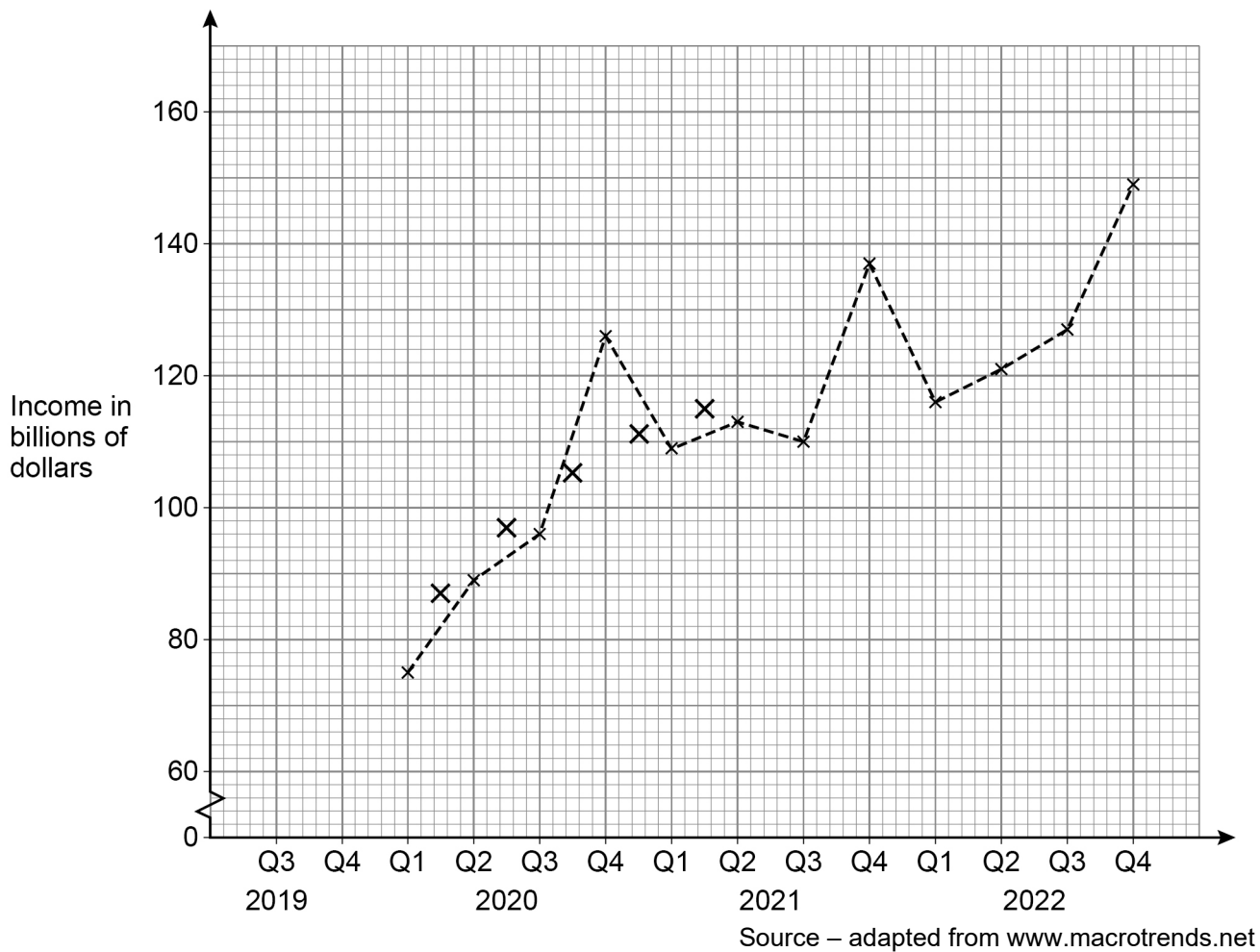
Show working to support your answer.

[2 marks]

11 (c) Here is the time series graph again showing the first five 4-point moving averages.

Plot the **five** remaining 4-point moving averages from part (b) and draw the trend line.

[3 marks]



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12 Chia works at a call centre.

Here are the waiting times, to the nearest minute, for the last 11 calls she answered.

3 4 5 5 5 6 7 9 13 15 16

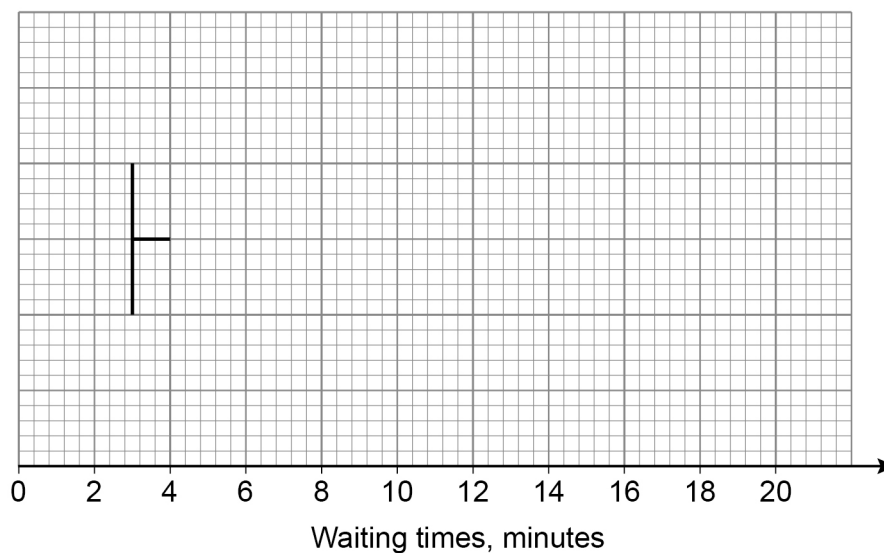
12 (a) Chia has started to draw a box plot for these waiting times.

Complete the box plot.

You may use the table to help.

[4 marks]

Lower quartile	
Median	
Upper quartile	



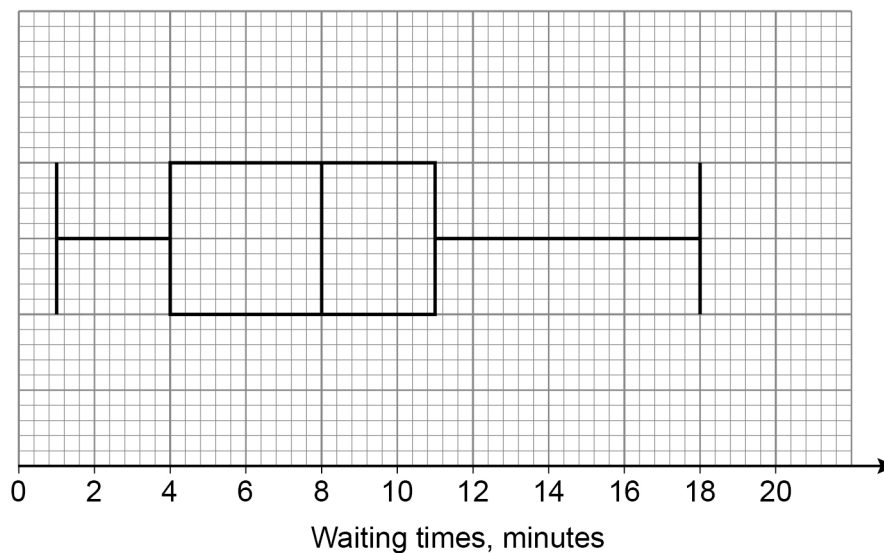
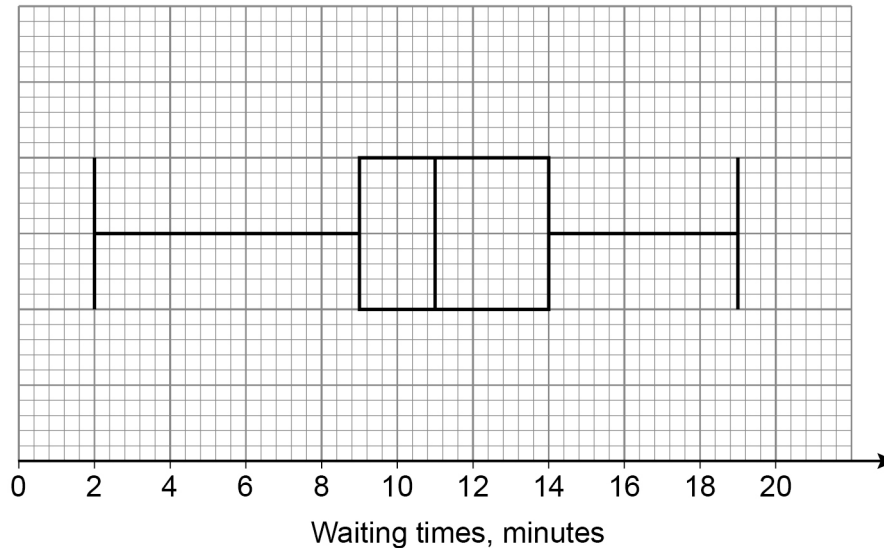
Question 12 continues on the next page



12 (b)

Chia is investigating the waiting times on different days.

Here are the box plots for the waiting times on a Monday and a Friday.

Monday**Friday**

Compare statistically the average waiting time and the consistency of the waiting times on this Monday and this Friday.

[3 marks]

7

Turn over for the next question



She has this information.

Year	Number of programmes	Number of equipment issues
2023	1690	127
2024	1760	88
2025	1840	

In January 2025, Jasmine wrote a report on the upgrade.

The report says,

- Comparing the risk of an equipment issue in 2023 and in 2024, the risk reduced by more than 2%
- Using the risk of an equipment issue in 2024, I calculate that during 2025 we expect fewer than 95 equipment issues.

13 (a) Comment on **both** points, using calculations to support your answer.

[5 marks]

[illegible]

13 (b) Give **one** reason why these risks might not be the same for a different TV station.

[1 mark]

6

END OF QUESTIONS



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[illegible]

[illegible]