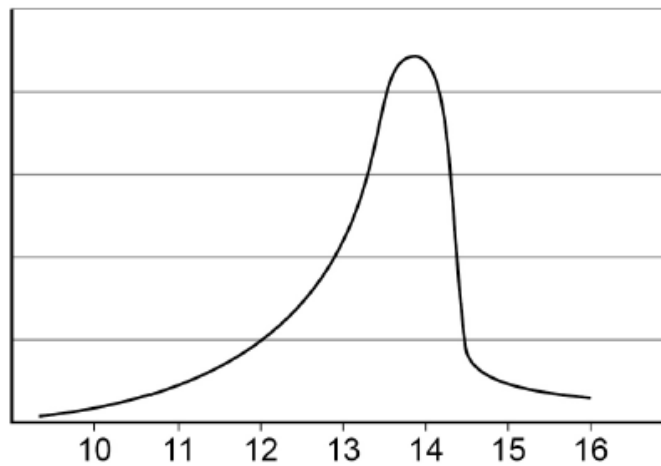


Tabulation and Representation of data – GCSE Statistics

1. No.3



Circle the word that completes this sentence correctly.

This diagram shows data with a negative _____ .

[1 mark]

median

skew

range

mode

2. No.5(c, d)

(c) The table shows the number of flowers in Antonio's most recent display.

Flower	Number used
Rose	12
Daisy	9
Lily	8
Carnation	15

Represent the data in a pictogram in the space below.

[4 marks]

- (d) The tally chart shows the number of flowers in a different display.

Flower	Tally
Rose	
Daisy	
Lily	
Carnation	

Antonio says there are exactly twice as many roses as daisies.

Is he correct?

Tick (✓) a box.

Yes

☐

No

☐

Show your working.

[2 marks]

3. No.9

Danni records the number of bedrooms and the number of televisions in 11 houses. She has these data that she needs to show as a graph or chart.

Number of bedrooms	1	2	3	2	3	4	3	4	4	5	4
Number of televisions	2	3	3	1	4	4	3	5	5	7	4

Which single graph or chart would be best to represent the data?

Circle your answer.

[1 mark]

pie chart

scatter diagram

bar line graph

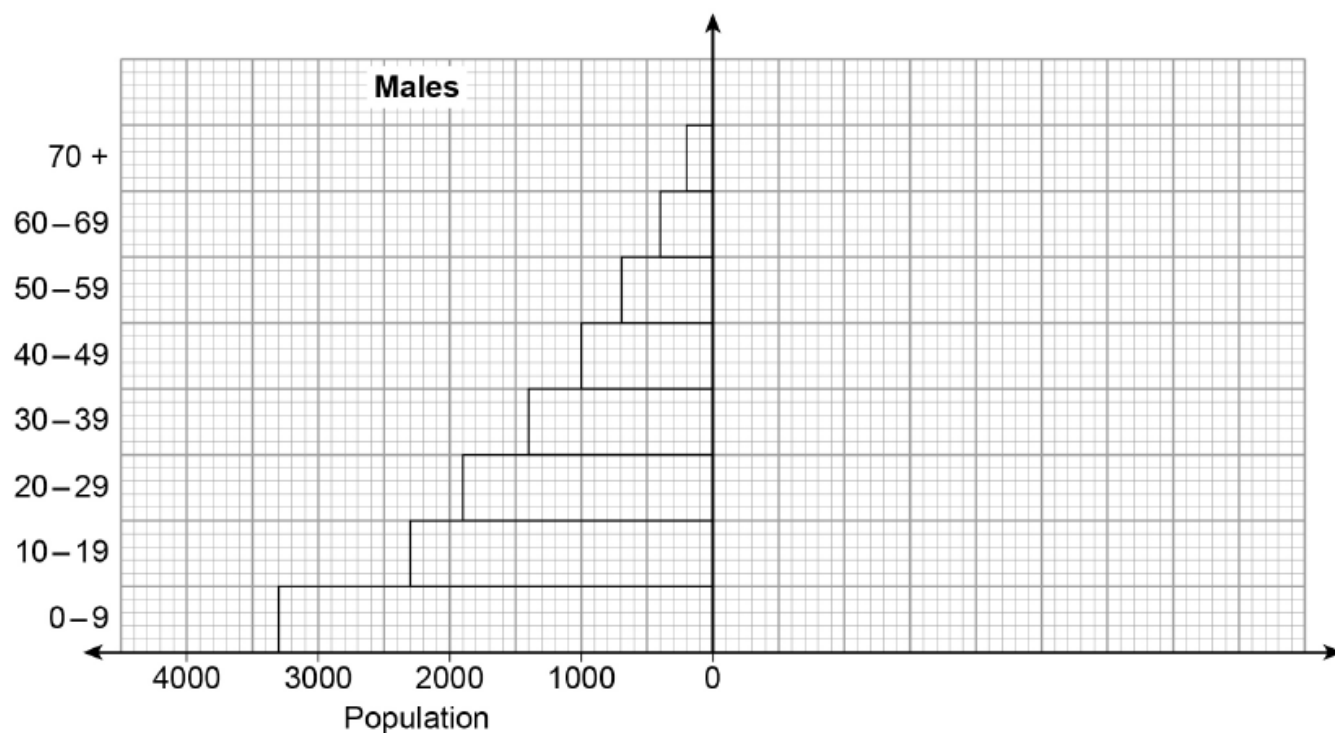
choropleth map

4. No.15

Luton is an industrial town.

The population pyramid shows the number of males living in Luton in 1851.

The population values are rounded to the nearest hundred.



Source: Adapted from visionofbritain

The table shows the number of **females** living in Luton in 1851.

Age group	Population (to nearest hundred)
0 to 9	3200
10 to 19	3300
20 to 29	3000
30 to 39	1800
40 to 49	1100
50 to 59	800
60 to 69	500
70 +	300

- (a) Complete the population pyramid to show the number of females living in Luton in 1851.
[3 marks]

- (b) The table shows the number of males and females in the 20 to 29 age group living in Luton in 1961.

Number of males	Number of females
9497	8967

Source: Adapted from visionofbritain

Make **two** distinct comments on how the numbers of males and females in the 20 to 29 age group are different in 1961 compared with in 1851.

[2 marks]

Comment 1 _____

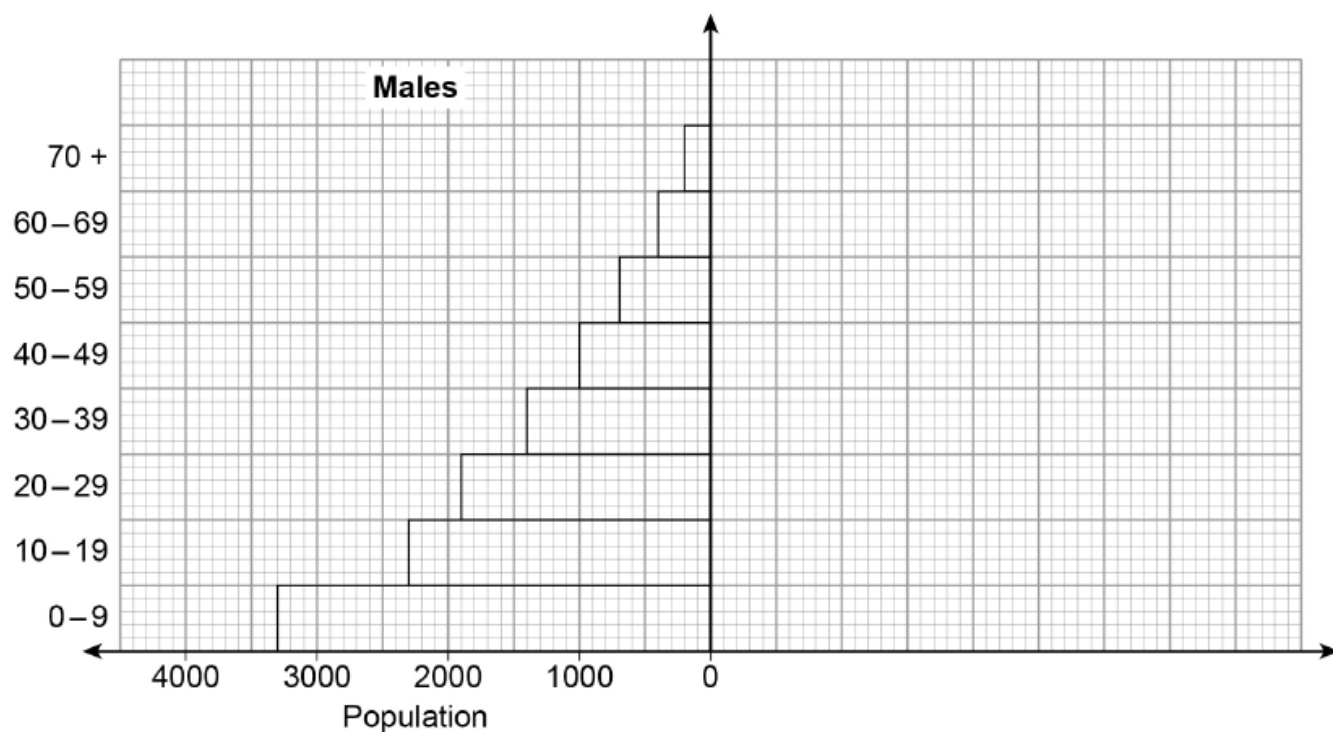
Comment 2 _____

5. No.6

Luton is an industrial town.

The population pyramid shows the number of males living in Luton in 1851.

The population values are rounded to the nearest hundred.



Source: Adapted from visionofbritain

The table shows the number of **females** living in Luton in 1851.

Age group	Population (to nearest hundred)
0 to 9	3200
10 to 19	3300
20 to 29	3000
30 to 39	1800
40 to 49	1100
50 to 59	800
60 to 69	500
70 +	300

- (a) Complete the population pyramid to show the number of females living in Luton in 1851.
[3 marks]

- (b) The table shows the number of males and females in the 20 to 29 age group living in Luton in 1961.

Number of males	Number of females
9497	8967

Source: Adapted from visionofbritain

Make **two** distinct comments on how the numbers of males and females in the 20 to 29 age group are different in 1961 compared with in 1851.

[2 marks]

Comment 1 _____

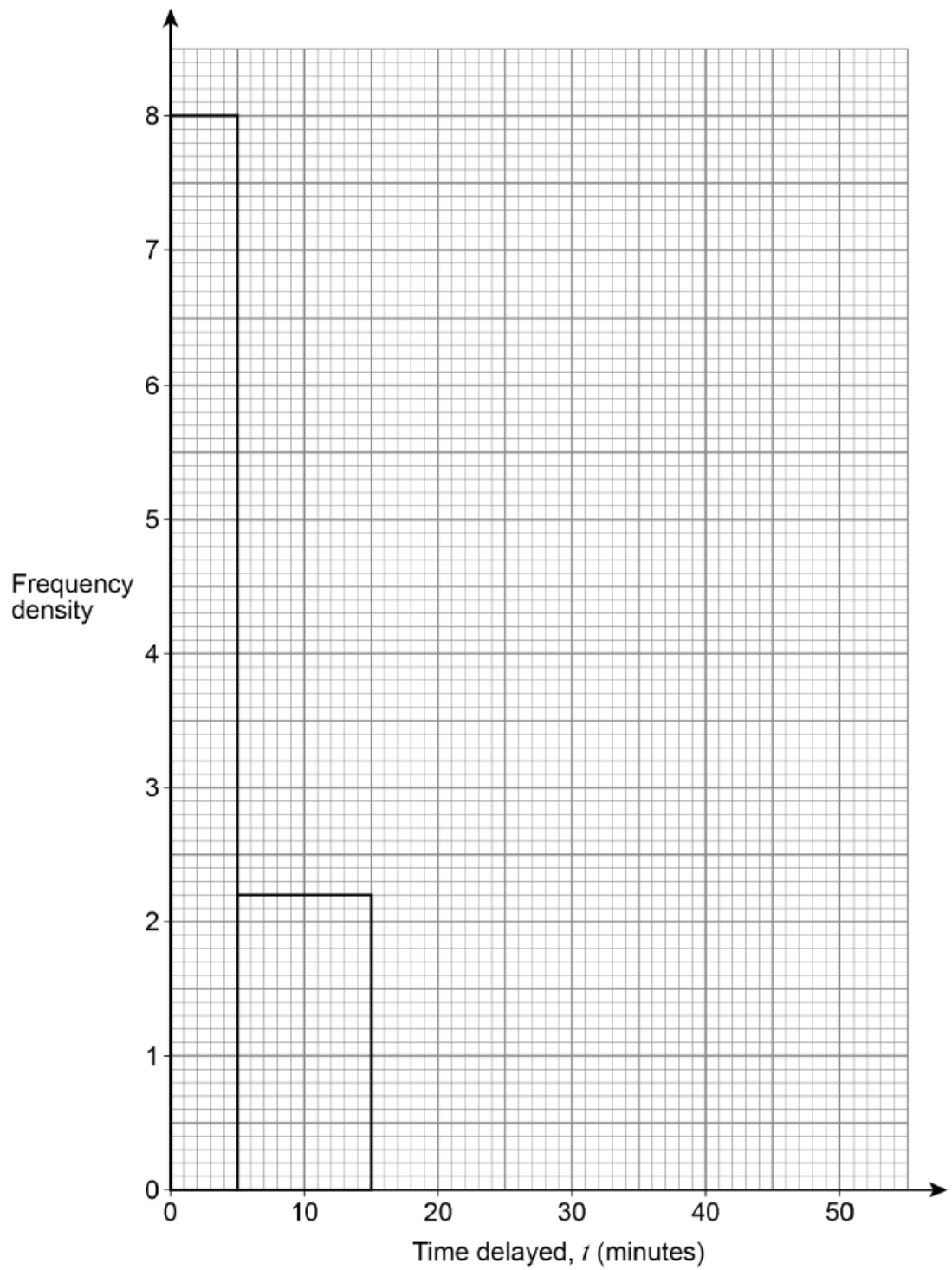
Comment 2 _____

6. No.11

The table shows, for one train company, some data about the amount of time by which 100 trains were delayed.

Time delayed, t (minutes)	Frequency
$0 < t \leq 5$	40
$5 < t \leq 15$	22
$15 < t \leq 20$	18
$20 < t \leq 30$	8
$30 < t \leq 50$	12

Here is a partly completed histogram for the data in the table.



- (a) Complete the histogram. [3 marks]

- (b) By using the histogram or the table, calculate an estimate for the median value. [3 marks]

Answer _____ minutes

- (c) Give a reason why the data does **not** necessarily show that the train company is performing badly. [1 mark]

7. No.4

Which of these diagrams could be suitable for displaying raw discrete data?

Circle your answer.

[1 mark]

frequency polygon

cumulative frequency curve

equal width histogram

stem-and-leaf diagram

8. No.6

A vet keeps records of the mass and height of each animal he has registered.

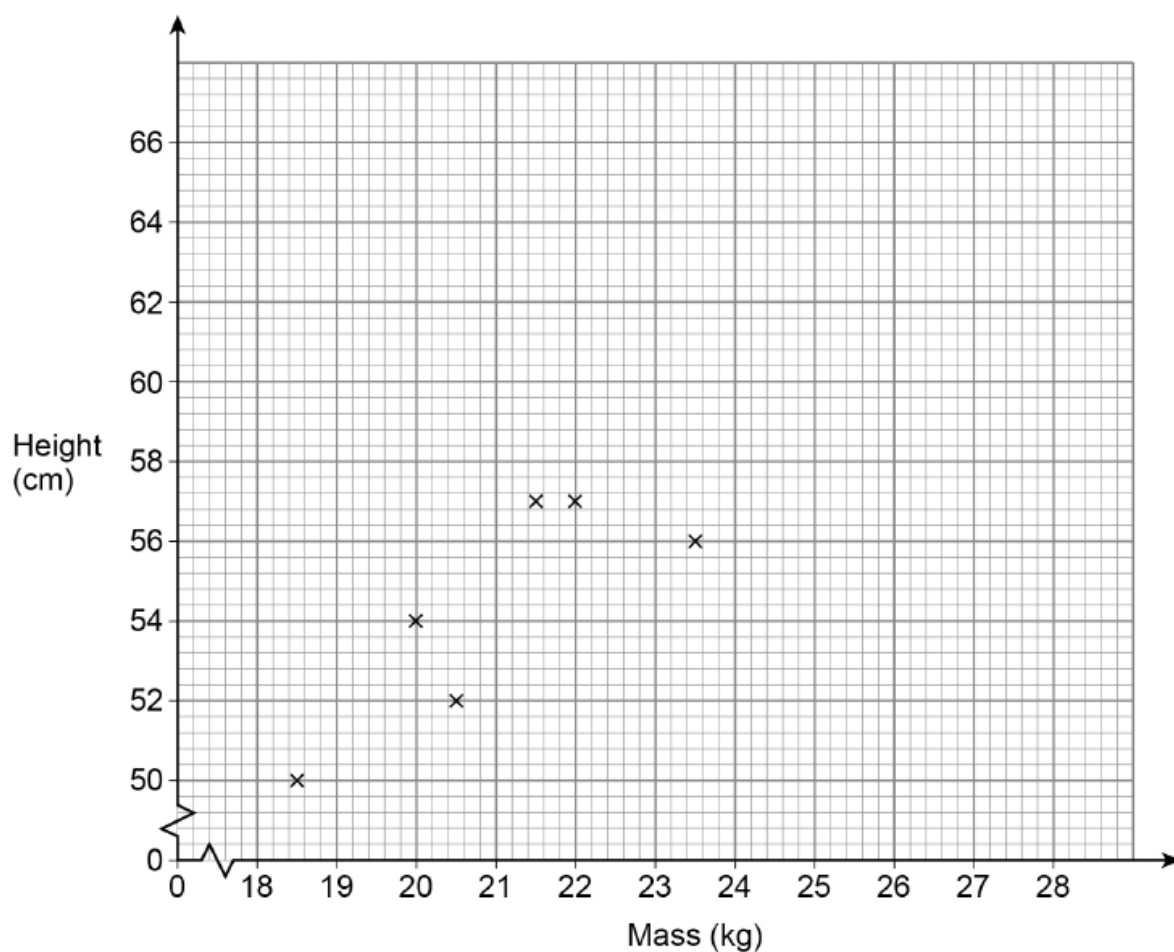
The table shows the masses and heights of 9 adult dogs which are of the Vizsla breed.

Mass (kg)	18.5	20	20.5	21.5	22	23.5	26.5	27	27.5
Height (cm)	50	54	52	57	57	56	65	65	66

- (a) The scatter graph shows the information for the first 6 dogs.

Complete the diagram, plotting the points for the last 3 dogs.

[1 mark]



- (b) The mean mass of these 9 Vizslas is 23 kg

Calculate their mean height.

[2 marks]

Answer _____ cm

- (c) Use the values from **part 6(b)** to help you draw a line of best fit on the diagram.

[2 marks]

- (d) A new adult Vizsla dog comes to the vet.

The dog has a mass of 25 kg

Estimate the height of this dog.

[1 mark]

Answer _____ cm

- (e) Another adult dog comes to the vet.

It has a mass of 19 kg and a height of 38 cm

Is it likely to be a Vizsla?

Tick (✓) a box.

[2 marks]

Yes

☐

No

☐

Cannot tell

☐

Give a reason for your answer.

9. No.14

Each week Tracey bakes cupcakes for a market stall.

Tracey tries to draw an ordered stem and leaf diagram to show the number of cupcakes she bakes for the last 15 weeks.

2		9	4	6	2	7
3		4	4	1	4	
4		7	1	2	3	
6		0	4			

Key: 2 | 4 represents 24 cupcakes

- (a) The data values are correct, but Tracey has made **two** errors.

What are the errors?

[2 marks]

Error 1 _____

Error 2 _____

- (b) It is still possible to correctly work out the median number of cupcakes from the stem and leaf diagram.

Work out this median.

[2 marks]

Answer _____

10. No.17

HS2 (High Speed 2) is a faster train service that will link major cities in England.

Tom believes most people are against HS2 because it affects countryside and housing along its routes.

He decides to gather opinions about HS2.

- (a) Write down a hypothesis Tom could use for his study.

[1 mark]

- (b) Here is one of the questions from Tom's study.

How old are you?			
Tick (✓) a box.			
☐ under 21	☐ 21 – 50	☐ 51 – 60	☐ 61 – 70

Write down **two** different problems with this question.

[2 marks]

Problem 1 _____

Problem 2 _____

(c) Here is an open question from Tom's study.

How much do you earn? £ _____

Write down a problem with this question.

[1 mark]

- (d) Tom reads that HS2 will link 29 stations.

He decides to take a random sample of 5 of the stations where he can ask people for their opinions.

Briefly describe a way Tom could achieve this.

[2 marks]

- (e) One of the stations Tom gets in his random sample is Manchester Piccadilly.

To find opinions, he goes there one Saturday afternoon and asks his questions to the first 100 people who will answer.

- (e) (i) Name this sampling method.

[1 mark]

Answer _____

- (e) (ii) What is good about Tom finding opinions in this way?

[1 mark]

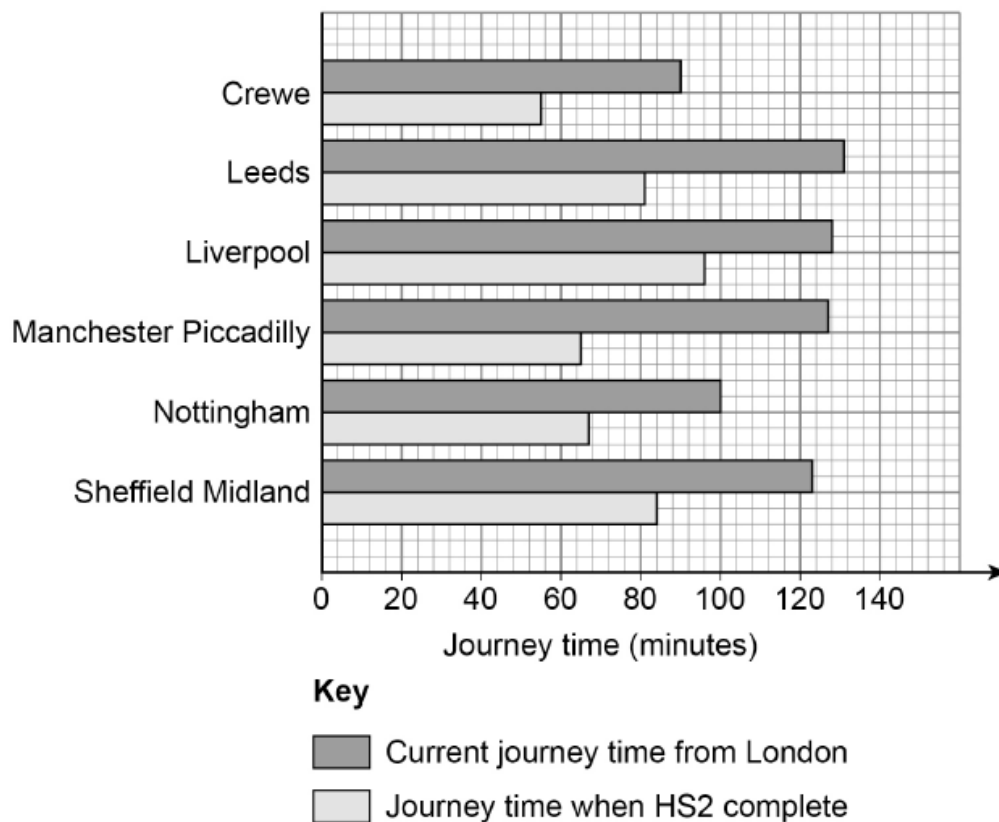
- (e) (iii) What is not so good about Tom finding opinions in this way?

[1 mark]

- (e) (iv) Give a reason why Tom should also find opinions of people where HS2 will not have a station.

[1 mark]

- (f) The Department of Transport produced this graph about HS2 in 2016 showing how journey times might change when HS2 is complete.



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

[1 mark]

Answer _____

- (f) (ii) Li Na says that the journey time between London and Manchester Piccadilly will be reduced by about an hour.

Is Li Na correct?

Tick (✓) a box.

Yes

☐

No

☐

Show working to justify your answer.

[2 marks]

- (g) This table also shows information about reduced journey times from London.

London to:	Current journey time (mins)	Journey time after HS2 (mins)	Reduction time in minutes (% reduction)
Chesterfield	109	75	34 (31.2%)
Crewe	90	55	35 (38.8%)
Edinburgh	263	218	45 (17.1%)
Glasgow	272	218	54 (19.9%)
Liverpool	128	96	32 (25.0%)
Newcastle	172	139	33 (19.2%)
Preston	128	84	

Work out the missing time and percentage in the Preston row.

[3 marks]

Answer _____ mins _____ %

11. No.10

A rare plant is found in only two forests in Scotland.

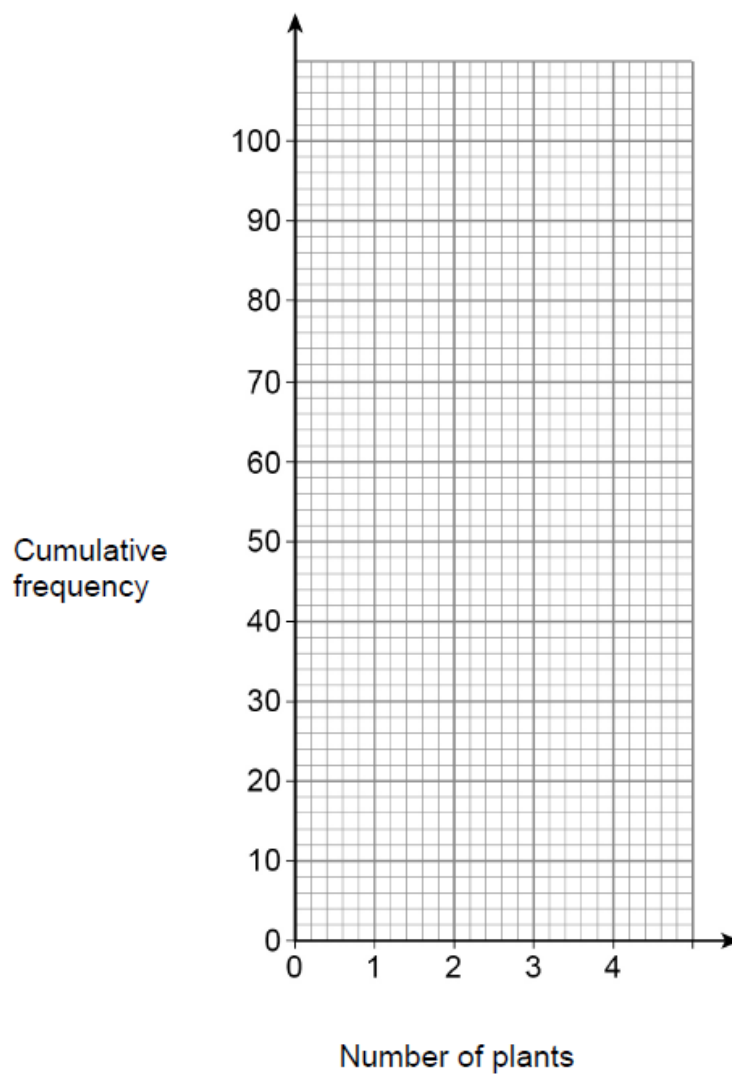
Loren is counting their numbers in same-sized areas in each of the forests.

- (a) In forest A, the number of the plants in each of 100 areas is summarised below.

Number of plants	Frequency		
0	34		
1	39		
2	12		
3	10		
4	5		

- (a) (i) Draw a cumulative frequency step polygon for forest A on the grid below.

[3 marks]



- (a) (ii) Give a reason why a cumulative frequency step polygon is appropriate for these data. [1 mark]

- (b) In forest B, the following information is obtained for 100 areas,
- the median number of plants = 2
 - the interdecile range between the 1st and 9th deciles = 1

Use this information and the information in **part (a)** to compare, in context, the number of plants in forest A and forest B.

[4 marks]

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and extend across the width of the page. There are no margins, text, or other markings on the paper.

- (c) A river in forest **B** is also home to a species of vole.

Loren wants to estimate the population of voles.

Here is her method,

1. She catches 30 voles and marks them with a dye.
2. She releases the voles on March 1st.
3. Loren returns to the forest on September 1st.
4. She catches 5 voles and sees how many are marked with the dye.

Criticise steps 3 and 4 in Loren's method.

[2 marks]

Step 3 criticism _____

Step 4 criticism _____
