

Charts and graphs

Exam questions

Foundation tier

Please write clearly in block capitals.

Name

Class **Teacher**

Time allowed: 95 minutes

Materials

For this booklet you need a black pen, a pencil, a ruler, a rubber, a protractor and a calculator for Section B.

Instructions

- Use black ink or black ballpoint pen. Draw diagrams in pencil.
- Fill in the boxes at the top of this page.
- Answer all questions in the spaces provided.
- **Section A** (questions 1 to 12): you must not use a calculator.
- **Section B** (questions 13 to 22): you may use a calculator.
- Do all rough work in this booklet. Cross through any work you do not want marked.

Information

- The marks for each question are shown in brackets.
- The maximum mark for this booklet is 83.

Advice

- Read each question carefully.
- In all calculations, show clearly how you work out your answer.

For teacher's use

Q	Mark	Q	Mark
1		12	
2		13	
3		14	
4		15	
5		16	
6		17	
7		18	
8		19	
9		20	
10		21	
11		22	
TOTAL			

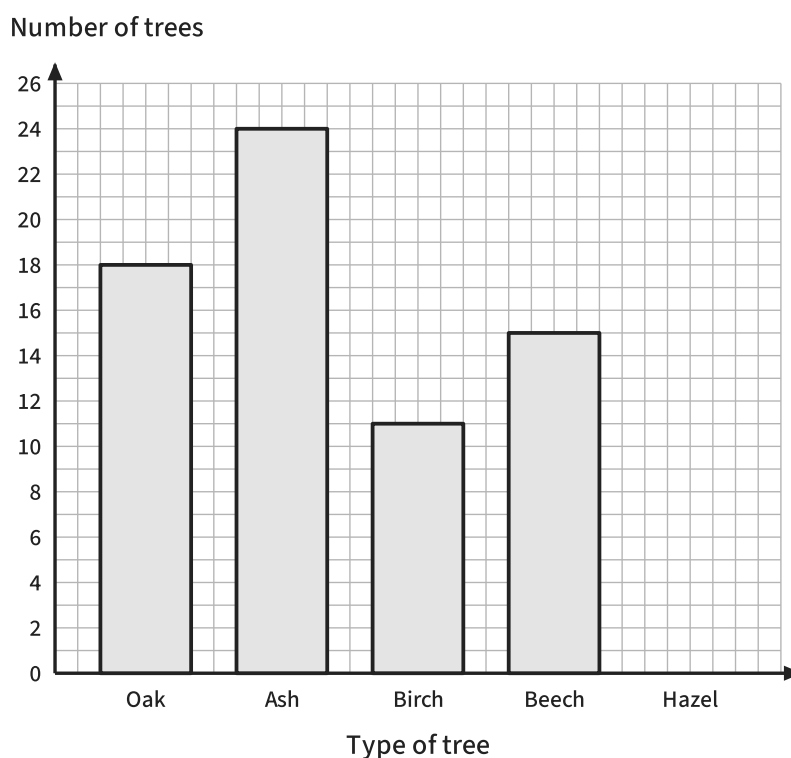
Section A



You must not use a calculator

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the box

- 1** The bar chart shows the numbers of four types of tree in a small wood.



- (a)** How many birch trees are in the wood?

Answer _____

[1 mark]

- (b)** How many more ash trees are there than beech trees?

Answer _____

[1 mark]

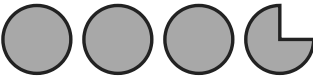
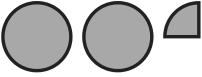
- (c)** There are 13 hazel trees in the wood.
Draw the bar for hazel on the bar chart.

[1 mark]

2

The pictogram shows the number of bikes hired from a cycle hire station on Monday, Tuesday and Wednesday.

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Day	Number of bikes hired
Monday	
Tuesday	
Wednesday	
Thursday	

 represents 8 bikes

(a) How many bikes were hired on Tuesday?

Answer _____

[1 mark]

(b) 14 bikes were hired on Thursday.
Complete the pictogram.

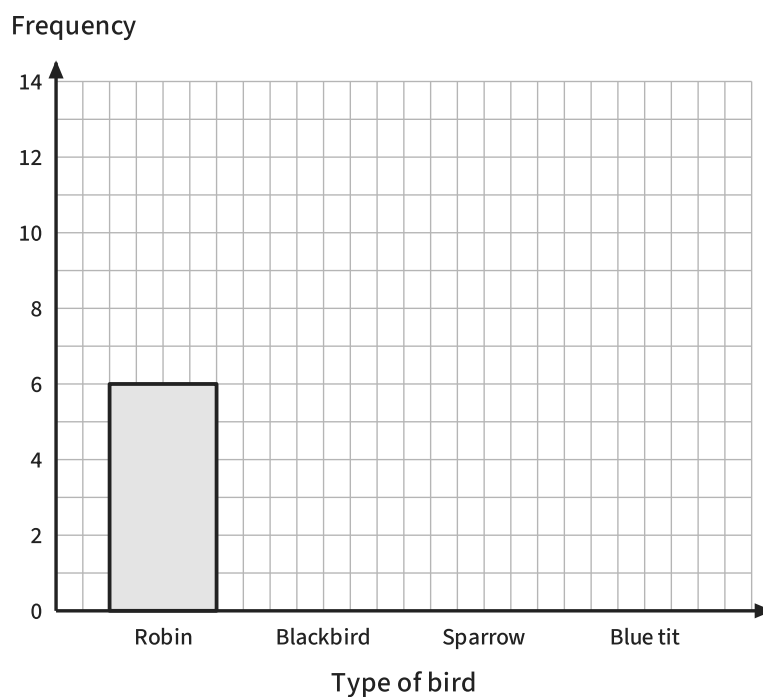
[1 mark]

3

Ellie records the birds that visit her garden one morning.

Type of bird	Frequency
Robin	6
Blackbird	9
Sparrow	12
Blue tit	3

(a) Complete the bar chart.



[2 marks]

(b) What fraction of the birds were blackbirds?

Answer _____

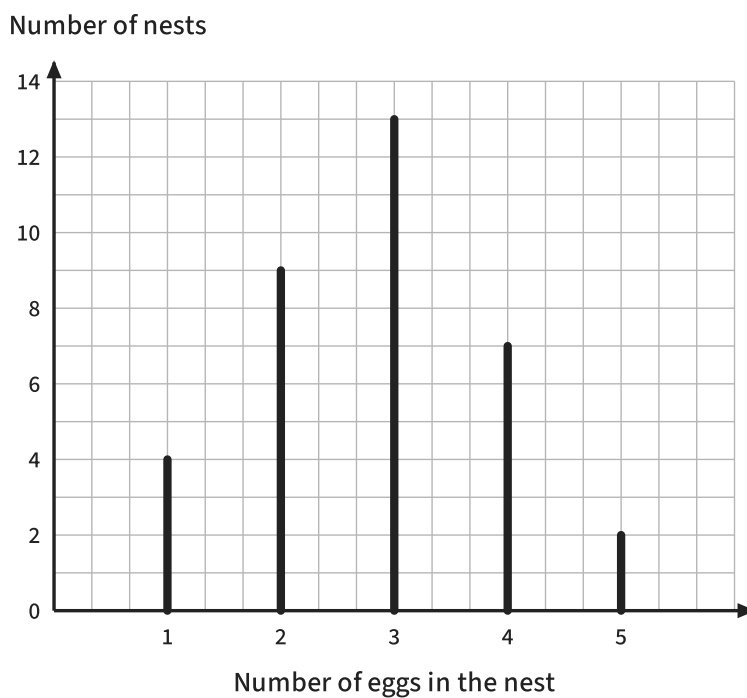
[1 mark]

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4

A survey records the number of eggs in each nest in a colony of seabirds. The vertical line chart shows the results.

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- (a) How many nests had 2 eggs?

Answer _____

[1 mark]

- (b) Write down the mode.

Answer _____

[1 mark]

- (c) Work out the total number of eggs in all of the nests.

Answer _____

[2 marks]

5

120 people visit a climbing centre on one day.

Each person chooses one type of climbing: bouldering, top rope or lead.

Complete the two-way table.

	Bouldering	Top rope	Lead	Total
Adults	14		21	
Children		29		
Total	45		28	120

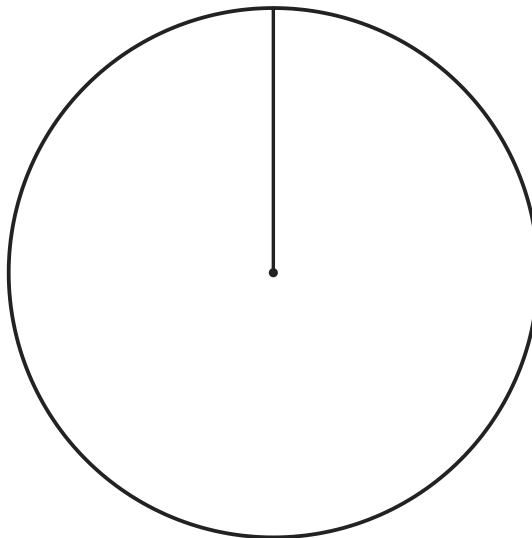
[3 marks]

6

45 visitors to a museum were asked how they heard about it.

How they heard	Frequency	Angle
Poster	9	
Website	16	
Friend	14	
Radio	6	

Draw a pie chart to show this information.



[4 marks]

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7

Here are the heights, in centimetres, of 15 tomato plants.

34 47 52 38 41 29 45 56 33 47 40 51 36 44 27

(a) Show this information in an ordered stem and leaf diagram.

2	
3	
4	
5	

Key:

[3 marks]

(b) Write down the median height.

Answer cm

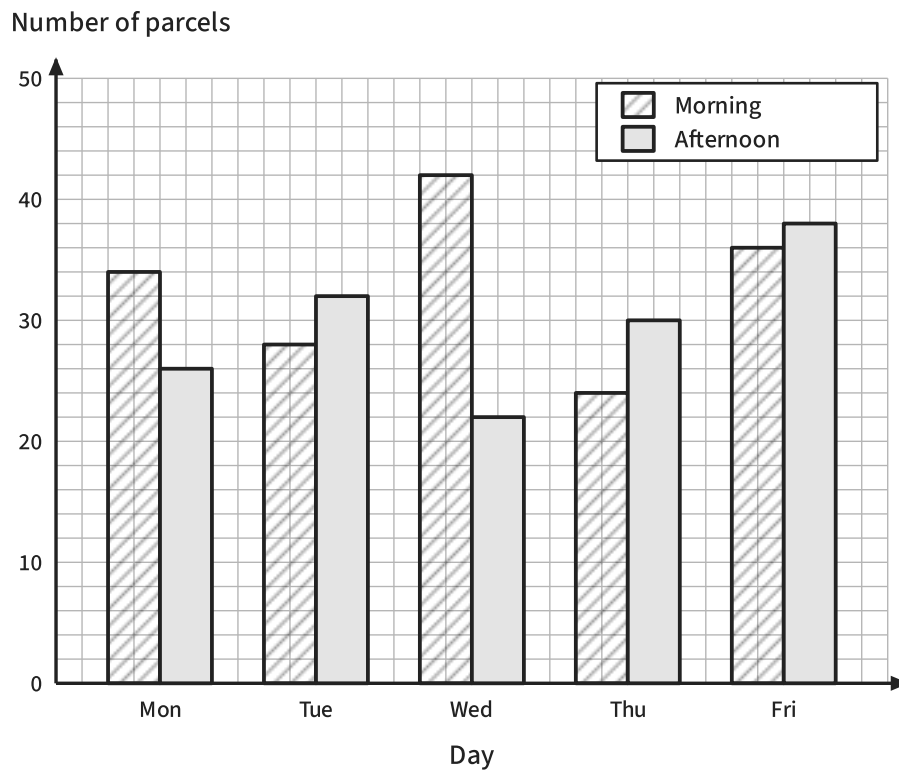
[1 mark]

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8

The dual bar chart shows the number of parcels a courier delivered each morning and each afternoon for one week.

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- (a) How many parcels were delivered on Wednesday morning?

Answer _____

[1 mark]

- (b) On which day were the most parcels delivered altogether?
You must show your working.

Answer _____

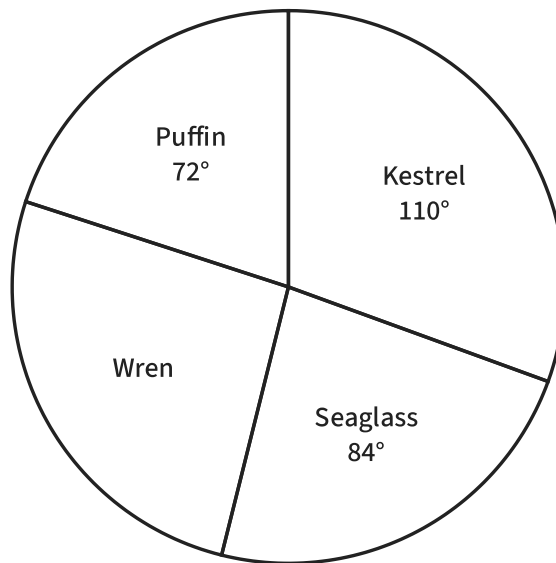
[2 marks]

- (c) Lena says,
“More parcels were delivered in the morning than in the afternoon on every day.”
Is Lena correct?
Give a reason for your answer.

[1 mark]

9

180 people voted for a name for a new ferry.
The pie chart shows the results.



- (a) Work out the angle for Wren.

Answer _____ degrees

[1 mark]

- (b) How many people voted for Seaglass?

Answer _____

[2 marks]

- (c) In a second poll, 90 people voted for a name for a different ferry.
In the pie chart for the second poll, the angle for Puffin is 120°

Tilly says,

“More people voted for Puffin in the second poll than in the first poll.”

Is Tilly correct?

You must show your working.

[2 marks]

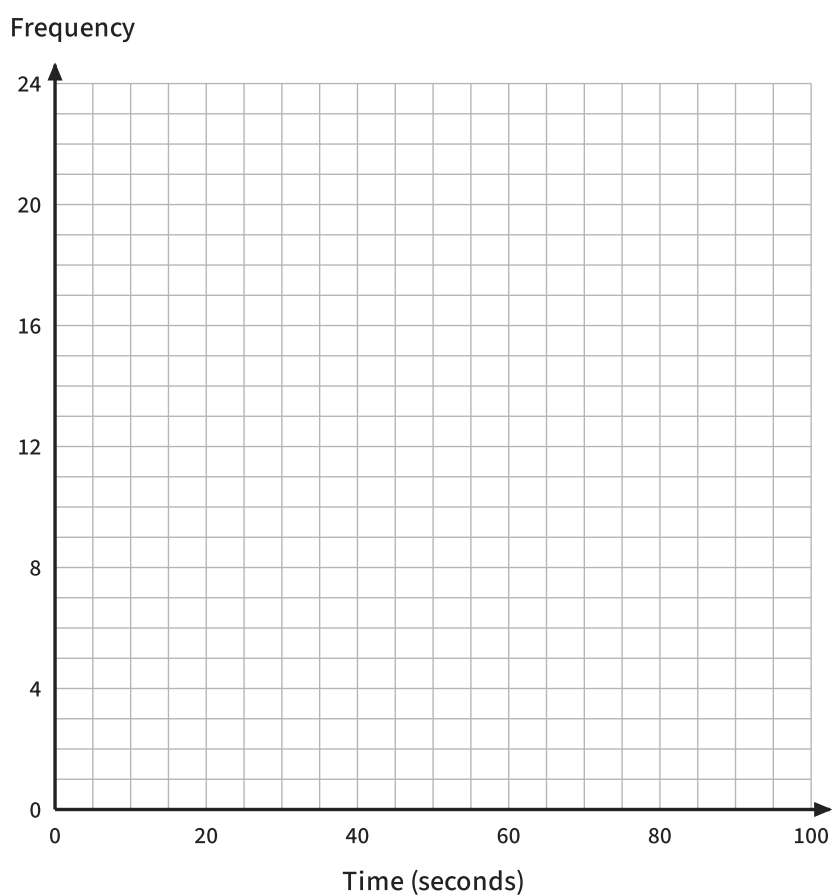
10

60 students each solved a puzzle.

The table shows information about the times, t seconds, they took.

Time (t seconds)	Frequency
$0 < t \leq 20$	6
$20 < t \leq 40$	15
$40 < t \leq 60$	21
$60 < t \leq 80$	12
$80 < t \leq 100$	6

- (a) Draw a frequency polygon for this information.



[2 marks]

- (b) Which class contains the median time?

Answer _____

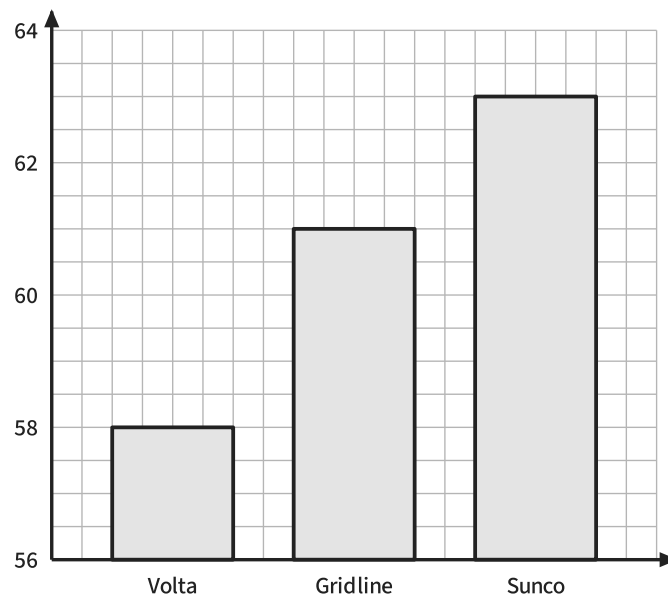
[1 mark]

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11

An energy company called Volta puts this chart in an advert. It shows the mean monthly bill, in pounds, of its customers and of the customers of two other companies.

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Give two reasons why the chart could be misleading.

[2 marks]

12

The back-to-back stem and leaf diagram shows the ages of the 13 people in a morning yoga class and the 13 people in an evening yoga class.

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Morning class**Evening class**

	1	9
	2	2 5 6 8
	3	1 3 3 7
8 5 1	4	0 4
8 7 5 2	5	2 8
8 6 3 1	6	
2 0	7	

Key: 1 | 4 | 0 means 41 years for the morning class and 40 years for the evening class

Compare the ages of the people in the two classes.

You must show your working.

[4 marks]

Section B



You may use a calculator

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- 13** The two-way table shows the numbers of tickets sold for the two showings of a film at a cinema on Saturday.

	Afternoon	Evening	Total
Adult	46	112	158
Child	63	38	101
Total	109	150	259

The table below shows the price of each ticket.

	Afternoon	Evening
Adult	£6.95	£9.40
Child	£4.80	£6.25

- (a) How many tickets were sold for the evening showing?

Answer _____

[1 mark]

- (b) Work out the total amount of money taken for the afternoon showing.

Answer £ _____

[2 marks]

- (c) How much more money was taken for the evening showing than for the afternoon showing?

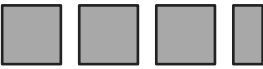
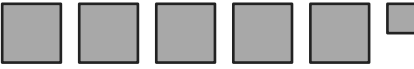
Answer £ _____

[2 marks]

14

A market stall sells hot chocolate.

The pictogram shows the number of cups it sold on three days.

Day	Number of cups sold
Friday	
Saturday	
Sunday	

 represents 12 cups

- (a) How many more cups were sold on Saturday than on Friday?

Answer _____

[2 marks]

- (b) Each cup of hot chocolate costs £2.85
Work out the total amount of money the stall took for hot chocolate on Sunday.

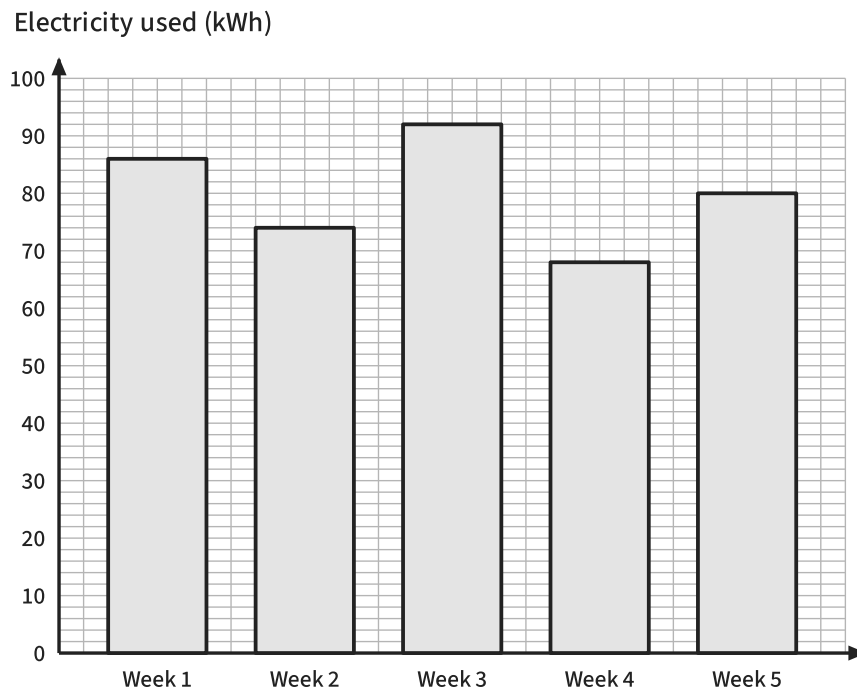
Answer £ _____

[2 marks]

15

The bar chart shows the amount of electricity, in kWh, used by a household in each of five weeks.

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- (a) In which week was the least electricity used?

Answer _____

[1 mark]

- (b) Electricity costs 24.5p for each kWh.
Work out the cost of the electricity used in Week 3
Give your answer in pounds.

Answer £ _____

[2 marks]

16

A charity shop records the type of each item it sells on Saturday.

Type of item	Frequency
Clothes	52
Books	31
Toys	18
Homeware	34

Femi is going to draw a pie chart to show this information.

Work out the angle for Clothes.

Give your answer to the nearest degree.

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Answer _____ degrees

[3 marks]

17

The stem and leaf diagram shows the times, in seconds, of 17 runners in a 100 metre race.

12		4 8
13		0 1 1 5 7 9
14		0 2 2 6 8
15		1 3 6 9

Key: 12 | 4 means 12.4 seconds

- (a) Write down the median time.

Answer _____ seconds

[1 mark]

- (b) Work out the range of the times.

Answer _____ seconds

[1 mark]

- (c) Runners with a time of less than 13.5 seconds go through to the final.
What percentage of the runners go through to the final?
Give your answer to 1 decimal place.

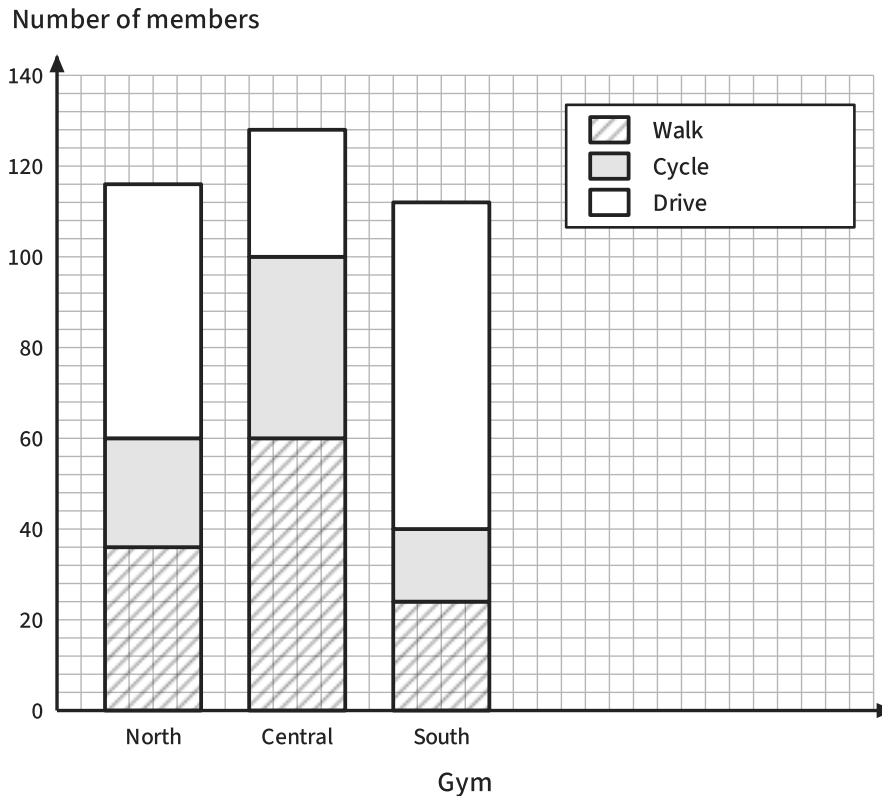
Answer _____ %

[2 marks]

18

The composite bar chart shows how the members of three gyms travel to their gym.

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- (a) How many members of the Central gym cycle to the gym?

Answer _____

[1 mark]

- (b) What percentage of the members of the North gym drive to the gym?
Give your answer to 1 decimal place.

Answer _____ %

[2 marks]

- (c) Kofi says,
"More members walk to the Central gym than drive to the South gym."
Is Kofi correct?
You must show how you decide.

[1 mark]

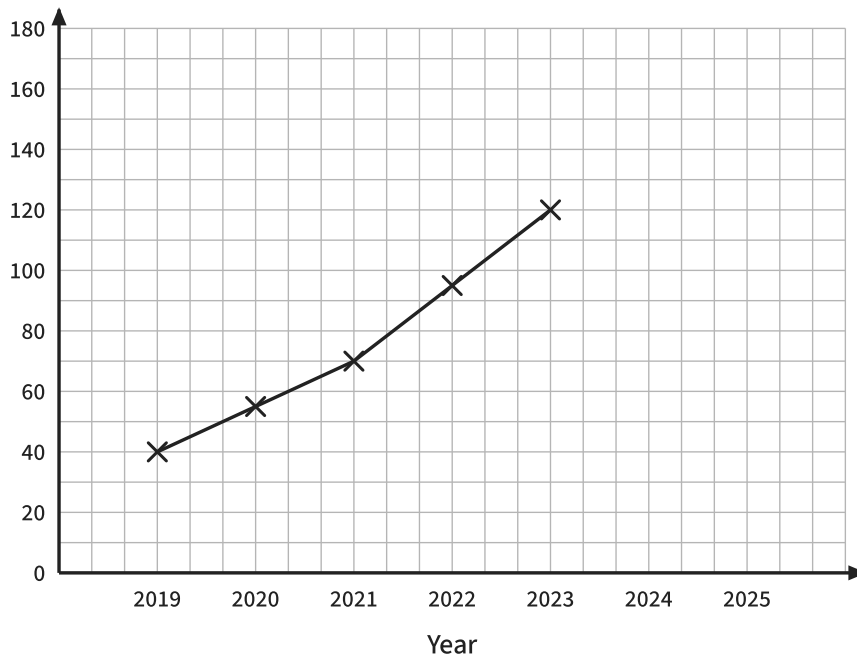
19

The time series graph shows the number of solar panels installed in a town each year from 2019 to 2023

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Year	2024	2025
Number installed	150	165

Number of solar panels installed



- (a) Use the table to complete the time series graph.

[2 marks]

- (b) Describe the trend in the number of solar panels installed.

[1 mark]

- (c) Work out the percentage increase in the number of solar panels installed from 2019 to 2025

Answer _____ %

[2 marks]

20

1450 people went to a music festival.

36% of the people were under 30

$\frac{3}{8}$ of the people aged 30 and over camped at the festival.

247 of the people under 30 did not camp.

Complete the two-way table.

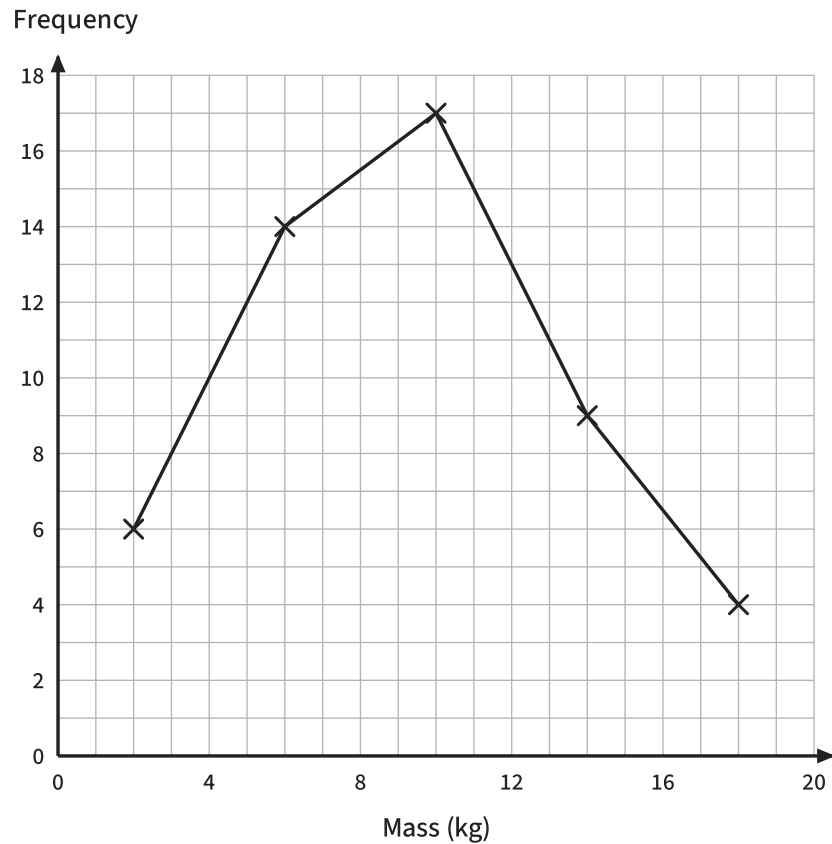
	Camped	Did not camp	Total
Under 30			
30 and over			
Total			1450

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[4 marks]

- 21** The frequency polygon shows information about the masses, m kilograms, of 50 pumpkins at a show.

The masses are grouped in the classes $0 < m \leq 4$, $4 < m \leq 8$ and so on.



- (a)** How many of the pumpkins have a mass of more than 12 kg?

Answer _____

[1 mark]

- (b)** Work out an estimate of the mean mass of the pumpkins.

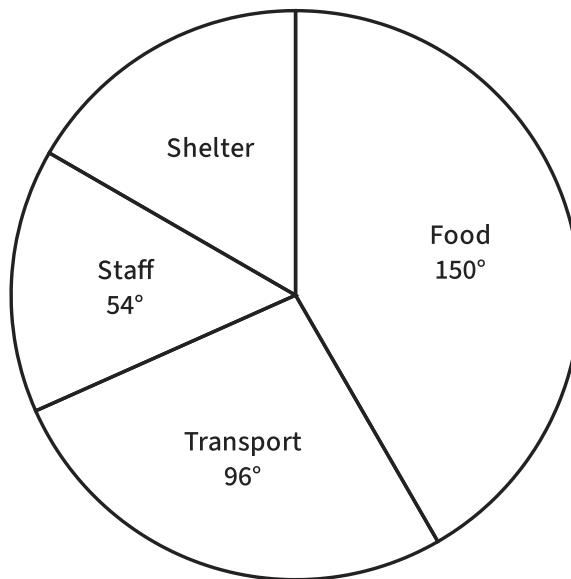
Answer _____ kg

[4 marks]

22

The pie chart shows how a charity spent its money last year.
It spent £24 000 on transport.

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- (a) Work out the total amount the charity spent last year.

Answer £ _____

[3 marks]

- (b) Work out the amount the charity spent on shelter.

Answer £ _____

[2 marks]

END OF QUESTIONS