

# NUMERACY INTERMEDIATE REVISION BOOKLET 4

NOV 2019

Name: .....  
Teacher: .....



# Handling Data.

F Maths Num 11 Nov 2016<sup>7</sup>

Examiner only

2. A flight to New York had 450 passengers. A survey was completed to see what the 450 passengers did for most of their time during the flight.

- 120 passengers watched films
- 60 passengers played games
- 130 passengers listened to music
- 30 passengers read a book
- The rest slept.

Draw a pictogram to represent what the 450 passengers did for most of their time during the flight to New York. [5]

Key:  represents 20 passengers.

| Time spent         |  |  |  |  |  |  |  |  |  |
|--------------------|--|--|--|--|--|--|--|--|--|
| Watching films     |  |  |  |  |  |  |  |  |  |
| Playing games      |  |  |  |  |  |  |  |  |  |
| Listening to music |  |  |  |  |  |  |  |  |  |
| Reading a book     |  |  |  |  |  |  |  |  |  |
| Sleeping           |  |  |  |  |  |  |  |  |  |

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07

176

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2. (a) 36 000 people took part in a survey to find out their favourite type of TV programme. The pie chart shows the results.



(i) How many people chose *Drama* as their favourite type of TV programme? You must show your working. [3]

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(ii) How many more people chose *Sport* rather than *News* as their favourite type of TV programme? You must show your working. [3]

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177



- (iii) Twice as many women as men chose *Talent shows* as their favourite type of TV programme.  
Calculate how many women chose *Talent shows*.  
You must show your working. [3]

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- (b) 1000 people were asked,

'Should news programmes include details of the weather?  
Yes or No?'

70% of the people answered 'yes'.

A pie chart is to be drawn to represent the answers to this question.

What size would the angle be to represent the answer 'yes'? [2]

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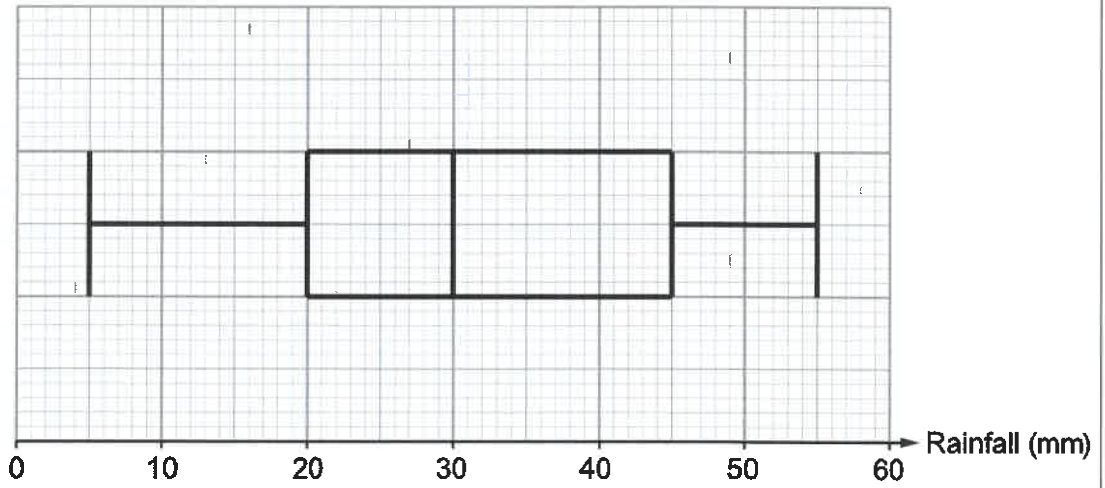
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Angle representing 'yes' is ..... °

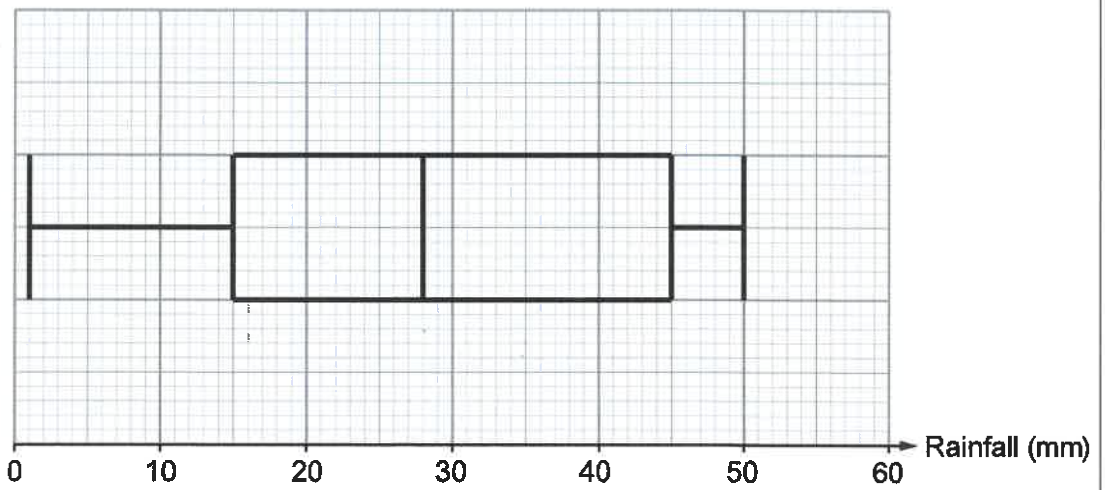


13. The following box-and-whisker plots illustrate the daily rainfall for April 2016 in Trefwen and in Nawrby.

April rainfall in Trefwen



April rainfall in Nawrby



(a) Complete the following table.

[4]

|         | Range    | Median   | Interquartile range |
|---------|----------|----------|---------------------|
| Trefwen | ..... mm | ..... mm | ..... mm            |
| Nawrby  | ..... mm | ..... mm | ..... mm            |

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(b) Iona is going on holiday next April.  
She is hoping for good weather, with hardly any rain.  
She decides to go to Nawrby.  
Give a reason to support Iona's decision.  
Include values for both Trefwen and Nawrby.

[1]

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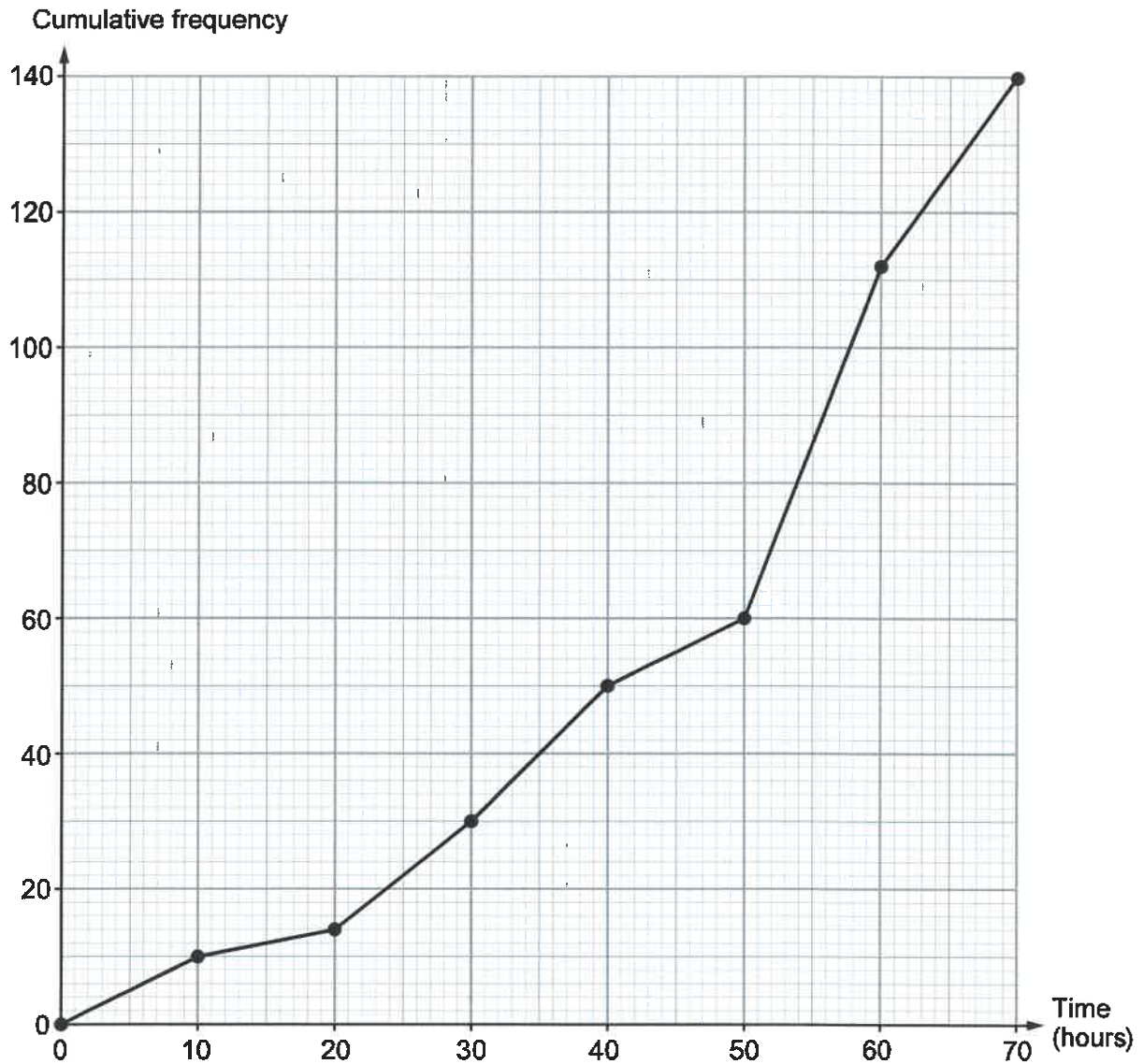
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11. (a) 140 girls were asked how long they spent revising for their GCSE examinations. The cumulative frequency diagram shows the results.



- (i) Estimate the median time the girls spent revising.  
Circle your answer.

[1]

35 hours      40 hours      48 hours      52 hours      70 hours

- (ii) Calculate the number of girls who spent between 40 and 50 hours revising.  
Circle your answer.

[1]

0 girls      5 girls      10 girls      15 girls      20 girls



(iii) Circle either TRUE or FALSE for each of the following statements.

[2]

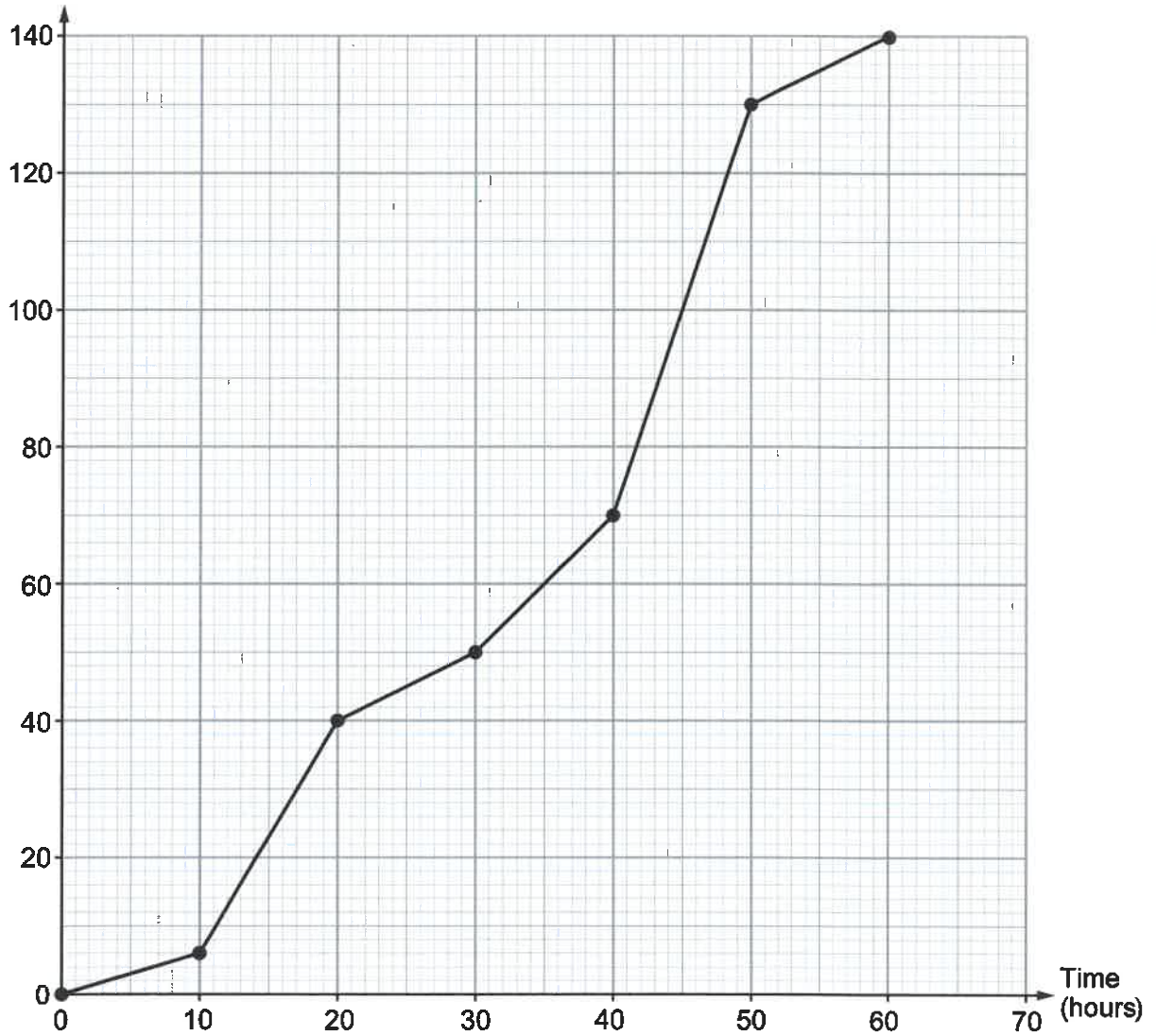
|  |      |       |
|--|------|-------|
| 25 girls spent between 30 and 50 hours revising.           | TRUE | FALSE |
| No girls spent more than 80 hours revising.                | TRUE | FALSE |
| The modal group is between 50 and 60 hours spent revising. | TRUE | FALSE |
| 20 girls spent more than 60 hours revising.                | TRUE | FALSE |





(b) 140 boys were asked how long they spent revising for their GCSE examinations. The cumulative frequency diagram below shows the results.

Cumulative frequency



Trefor makes two statements.

- 1. The boys' interquartile range is greater than the girls' interquartile range.
- 2. On average, boys spent more time revising.

Are both Trefor's statements correct?  
Show calculations and give reasons to support your answers.

[4]

Statement 1: .....

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Statement 2: .....

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184

5. (a) Students are taking tests in English and Welsh.  
The English test is marked out of 80.  
The Welsh test is marked out of 70.

(i) Dyfed scores 35 in his English test.  
Estimate Dyfed's score as a percentage.  
Circle your answer.

[1]

- 4%                      20%                      23%                      44%                      51%

.....

.....

(ii) Liam scores 22 in his Welsh test.  
Estimate Liam's score as a percentage.  
Circle your answer.

[1]

- 0.3%                      3%                      22%                      31%                      40%

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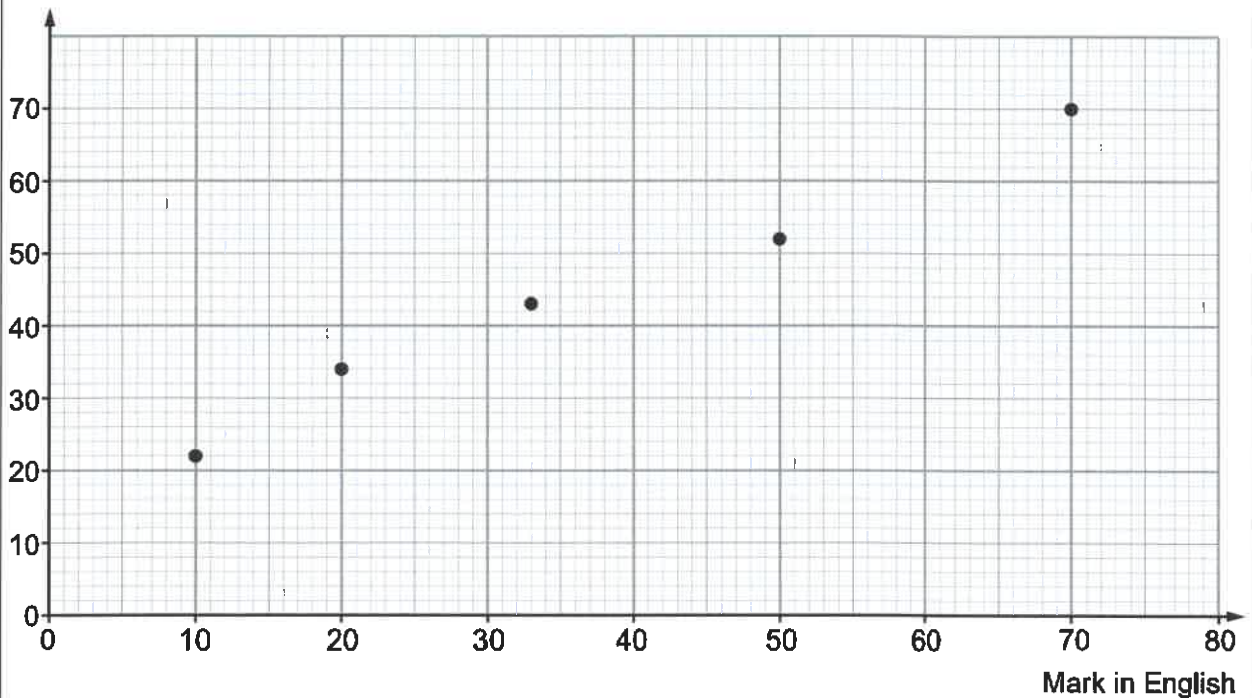
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(b) Rowena states a hypothesis,  
'Boys do better than girls in their English tests.'

She displays the test marks for 5 girls and 5 boys in scatter diagrams.

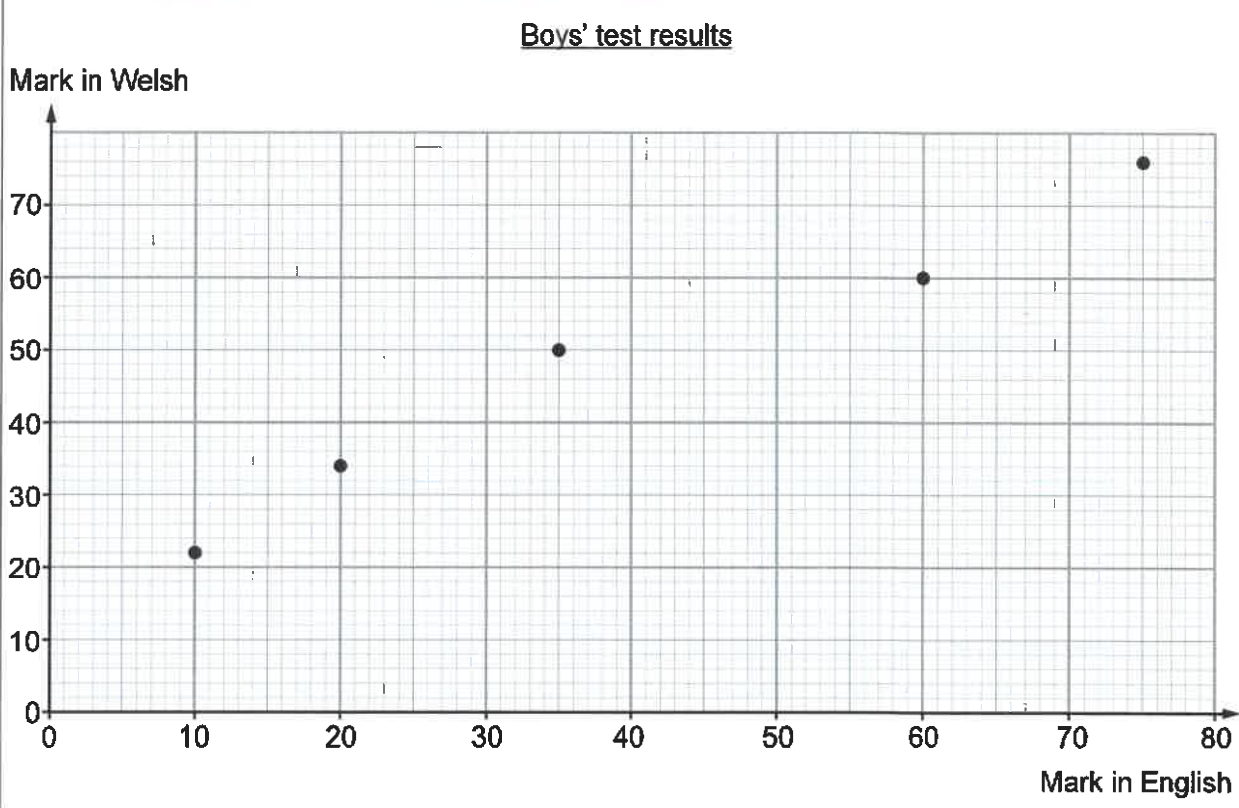
Girls' test results

Mark in Welsh



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(i) Does the data support Rowena's hypothesis? You must give a reason for your answer. [1]

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(ii) How could Rowena improve the testing of her hypothesis? [1]

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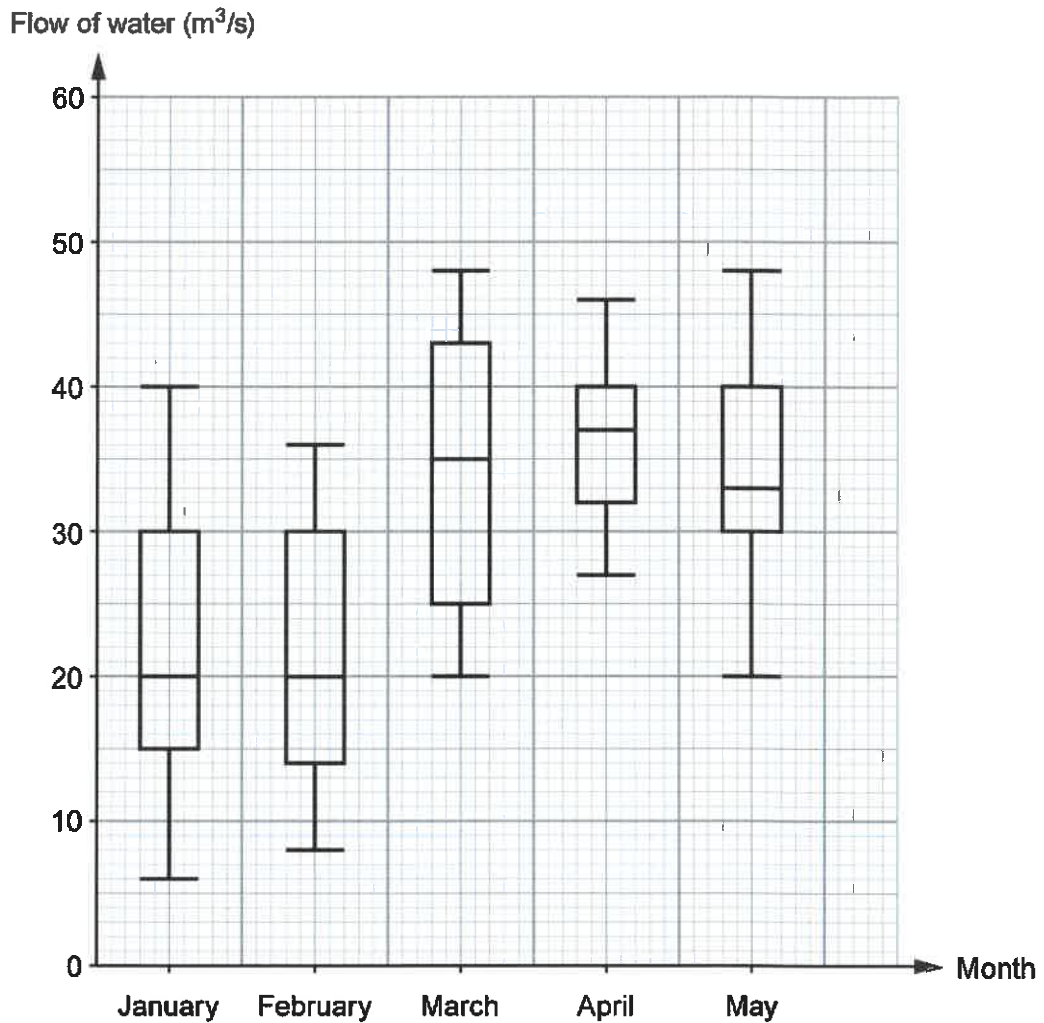
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(c) Draw a line of best fit by eye to estimate how many marks you might expect a boy to score in a Welsh test if he scored 50 marks in his English test. [2]

..... marks



11. The following box and whisker plots show the flow of water through a drain, measured in  $\text{m}^3/\text{s}$ . The flow of water was measured at 11 a.m. each day for the first 5 months of the year.



- (a) In which of the five months was the median flow of water the greatest? [1]

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.....



(b) In which of the five months was the range of the flow of water the greatest? [1]

.....  
 .....

(c) Iona is writing some statements for a report on the flow of water through the drain. Complete each of the statements given below.

(i) 'Both the upper quartiles and medians in the months of .....  
 and ..... were the same.' [1]

(ii) '25% of the results in March show the flow of water was greater than  
 .....  $m^3/s$ .' [1]

(d) Circle either TRUE or FALSE for each of the following statements. [2]

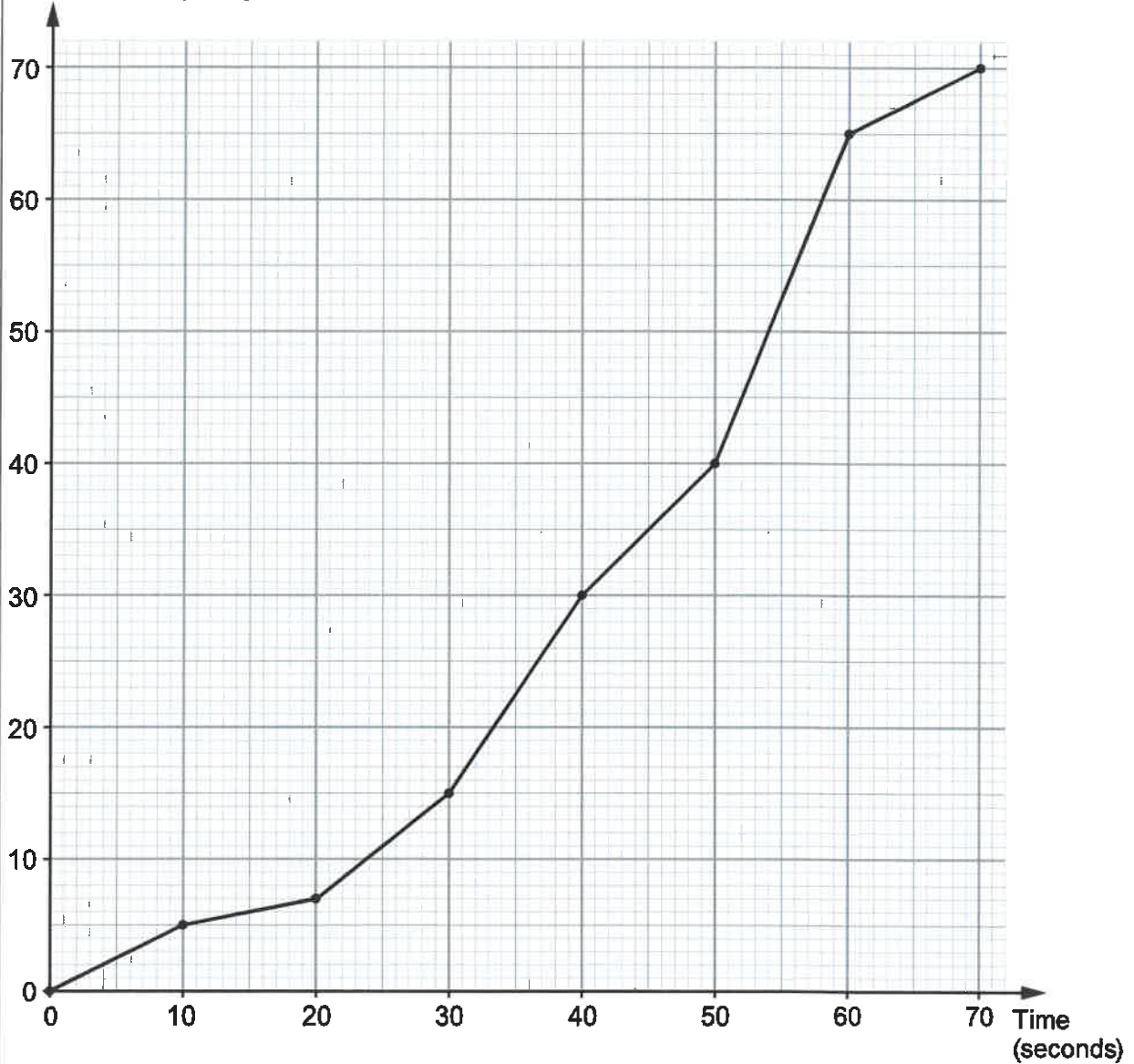
|   |      |       |
|---|------|-------|
| 25% of the results in January show the flow of water was less than $6 m^3/s$ .            | TRUE | FALSE |
| The units, $m^3/s$ , measure the volume of water passing through the drain each second.   | TRUE | FALSE |
| The mean flow of water in April was <b>certainly</b> greater than $36 m^3/s$ .            | TRUE | FALSE |
| The month with the greatest difference between the lower quartile and the median was May. | TRUE | FALSE |





10. Cambria Airlines has planes that can carry up to 70 passengers. For safety, the crew practise the emergency exit procedures with a group of 70 passengers. Every 10 seconds the safety officer records the total number of passengers who have left the plane. He has displayed the results in the cumulative frequency diagram shown below.

Cumulative frequency



- (a) Estimate the median time taken by the passengers to leave the plane. [1]

..... seconds

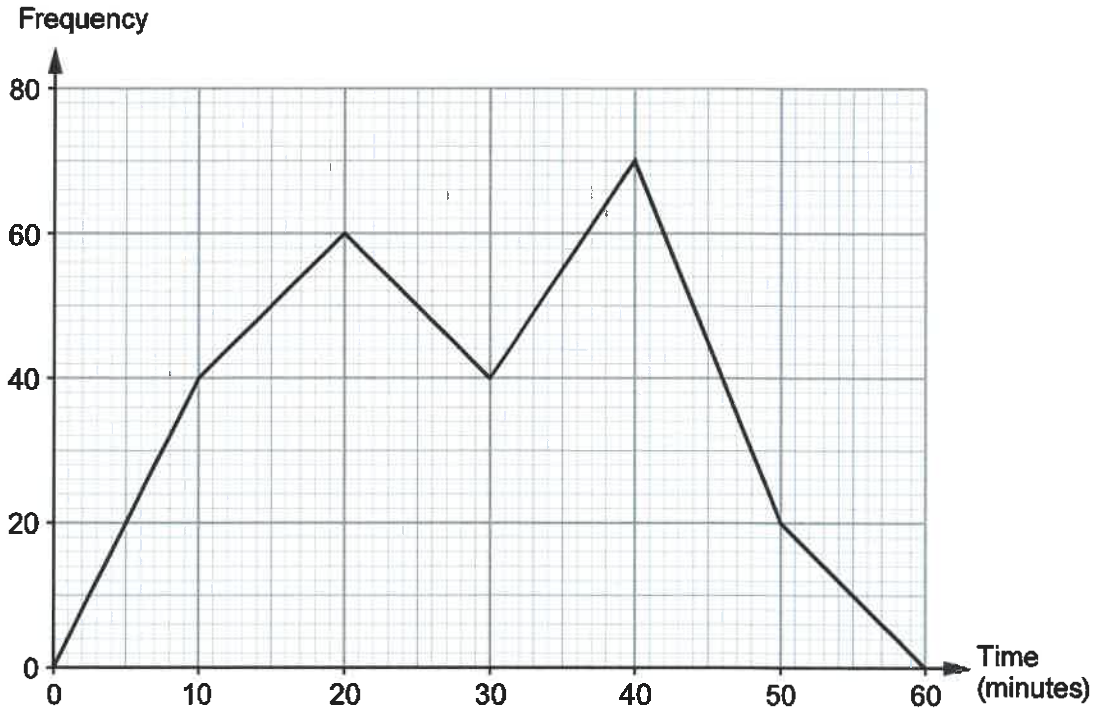




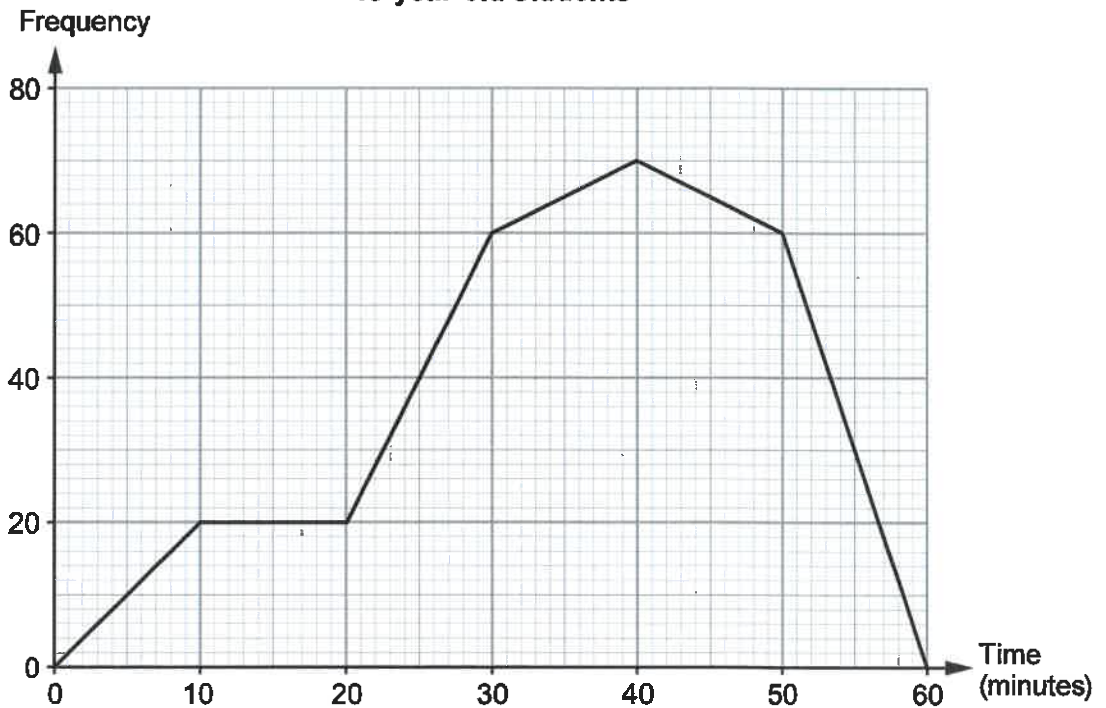


6. A survey was carried out to find how much time a group of 16-year-old students and a group of 18-year-old students spent using social media. The frequency polygons below, which use equal time intervals, illustrate the results.

**16-year-old students**



**18-year-old students**



(a) How many 16-year-old students took part in the survey?  
Circle your answer.

[1]

60                      70                      210                      230                      2300

(b) How many more 16-year-old students than 18-year-old students spent between 15 minutes and 25 minutes using social media?  
Circle your answer.

[1]

20                      40                      60                      100                      250

(c) Wesley says,

'The 16-year-old students generally spent about the same time using social media as the 18-year-old students.'

Using the frequency polygons, how would you explain to Wesley that his statement is not true?

[1]

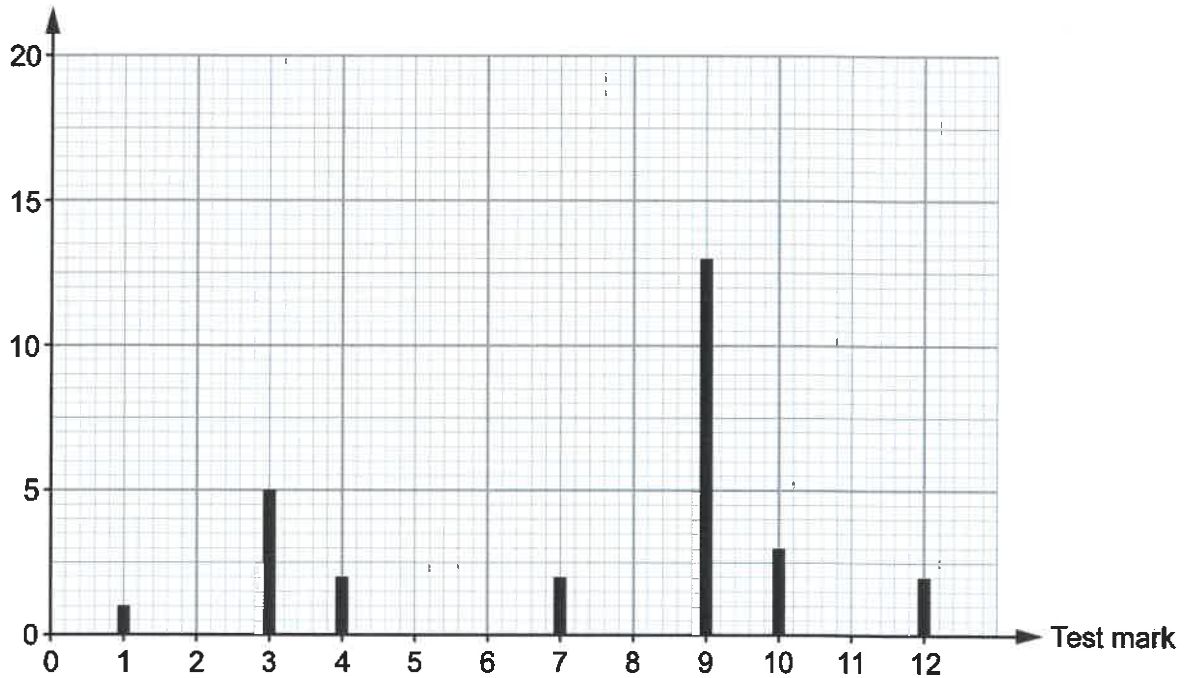


8. (a) Miss Rashud gave her Year 9 French class a test on Wednesday. She asked her class to spell 12 different words.

She displays the results as shown below.

**Year 9 results**

Number of pupils



- (i) How many pupils scored more than 9 in the test? [1]

- (ii) How many pupils are there in Miss Rashud's French class? [1]

- (iii) What assumption have you made in answering part (ii)? [1]

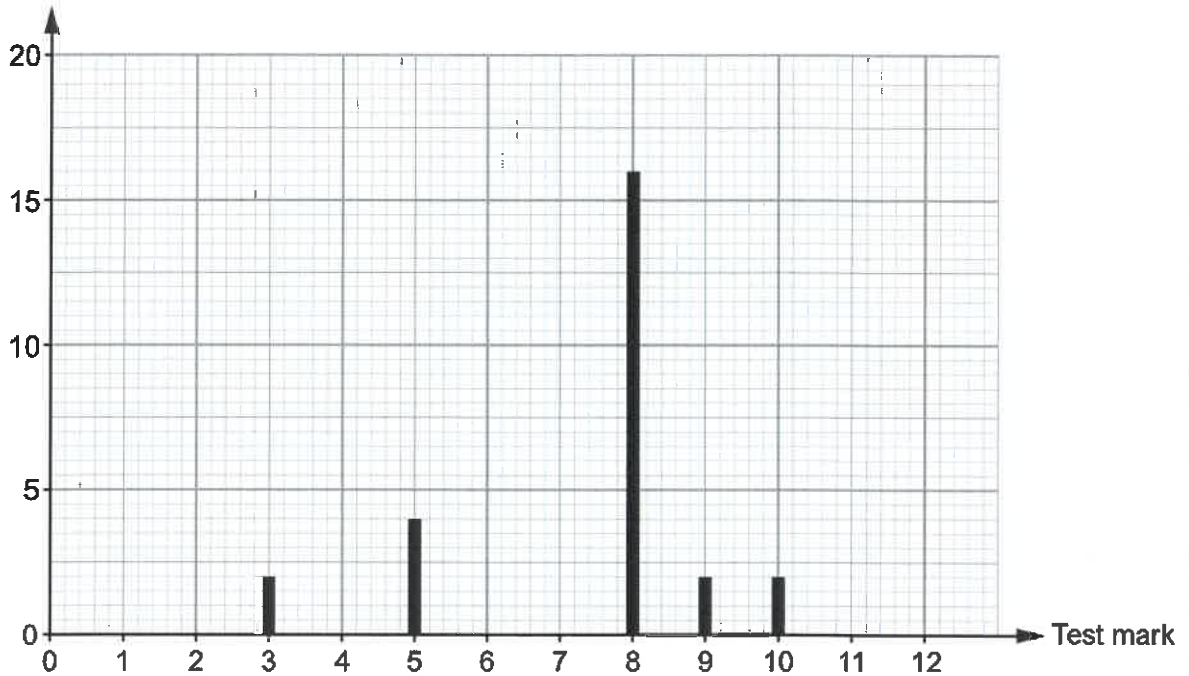
- (b) Miss Rashud also gave the same test to her Year 10 French class on Wednesday. She asked her class to spell the same 12 words.

She displays the results as shown opposite.



Year 10 results

Number of pupils



(i) Leon says,

'By looking at the Year 10 graph, I think there is very little difference between the mode and the mean for these scores.'

Without calculating the mean, explain whether Leon is correct or not. [1]

Correct

Not correct

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(ii) Catrin looks at the two sets of data Miss Rashud has displayed. She says,

'Year 10 are better at spelling than Year 9.'

Is Catrin's statement correct?

You must give values to support your answer.

[1]

Catrin is correct

Catrin is incorrect

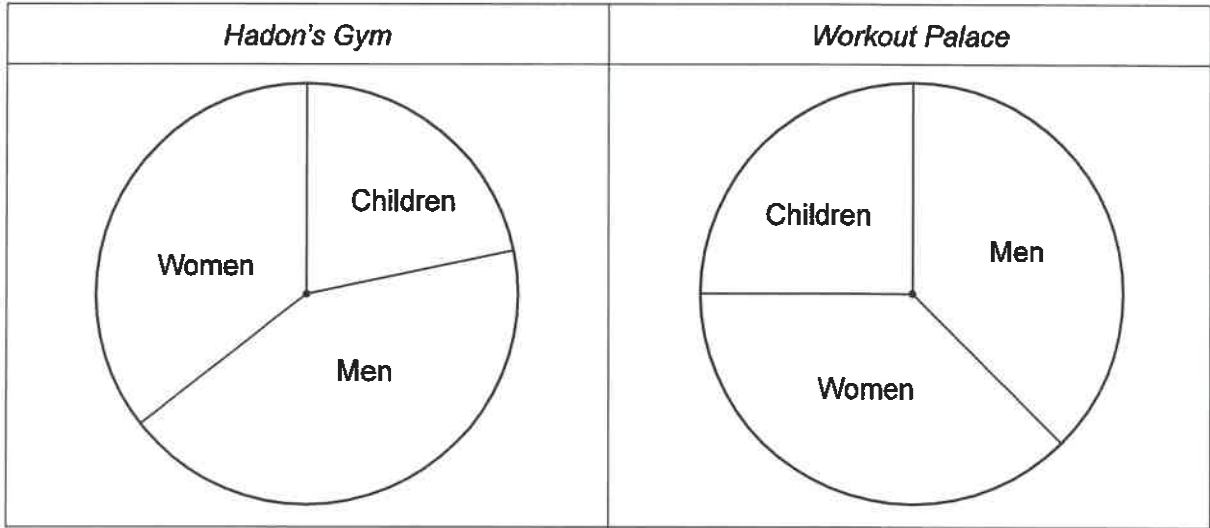
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3. Tomos is looking at gym memberships for *Hadon's Gym* and *Workout Palace*. Each of these gyms displays its membership in a pie chart.



- (a) About what percentage of the members at *Hadon's Gym* are children?  
Circle your answer.

[1]

10%                      20%                      30%                      40%                      50%

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- (b) Which of the following is the best estimate for the percentage of the members at *Workout Palace* who are women?  
Circle your answer.

[1]

25%                      28%                      30%                      32%                      38%

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- (c) Tomos says,  
'There are more men with membership at *Hadon's Gym* than at *Workout Palace*.'  
Is Tomos **certain** to be correct?  
You must give a reason for your answer.

[1]

Yes                       No

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- (b) Tamsin and Sophie have carried out a survey to find which biscuits are the most popular. The four most popular biscuits are chocolate cookies, custard creams, jammy dodgers and digestives. Design a tally chart that Tamsin and Sophie could have used to collect their data and show their results. [3]

- (c) Tomas makes rectangular biscuits. The top of each biscuit has a surface area of  $30 \text{ cm}^2$ . Tomas covers the surface area of the top of each biscuit with chocolate. The chocolate costs 3 pence per  $10 \text{ cm}^2$ . Calculate the cost of covering 200 of these biscuits with chocolate. [3]

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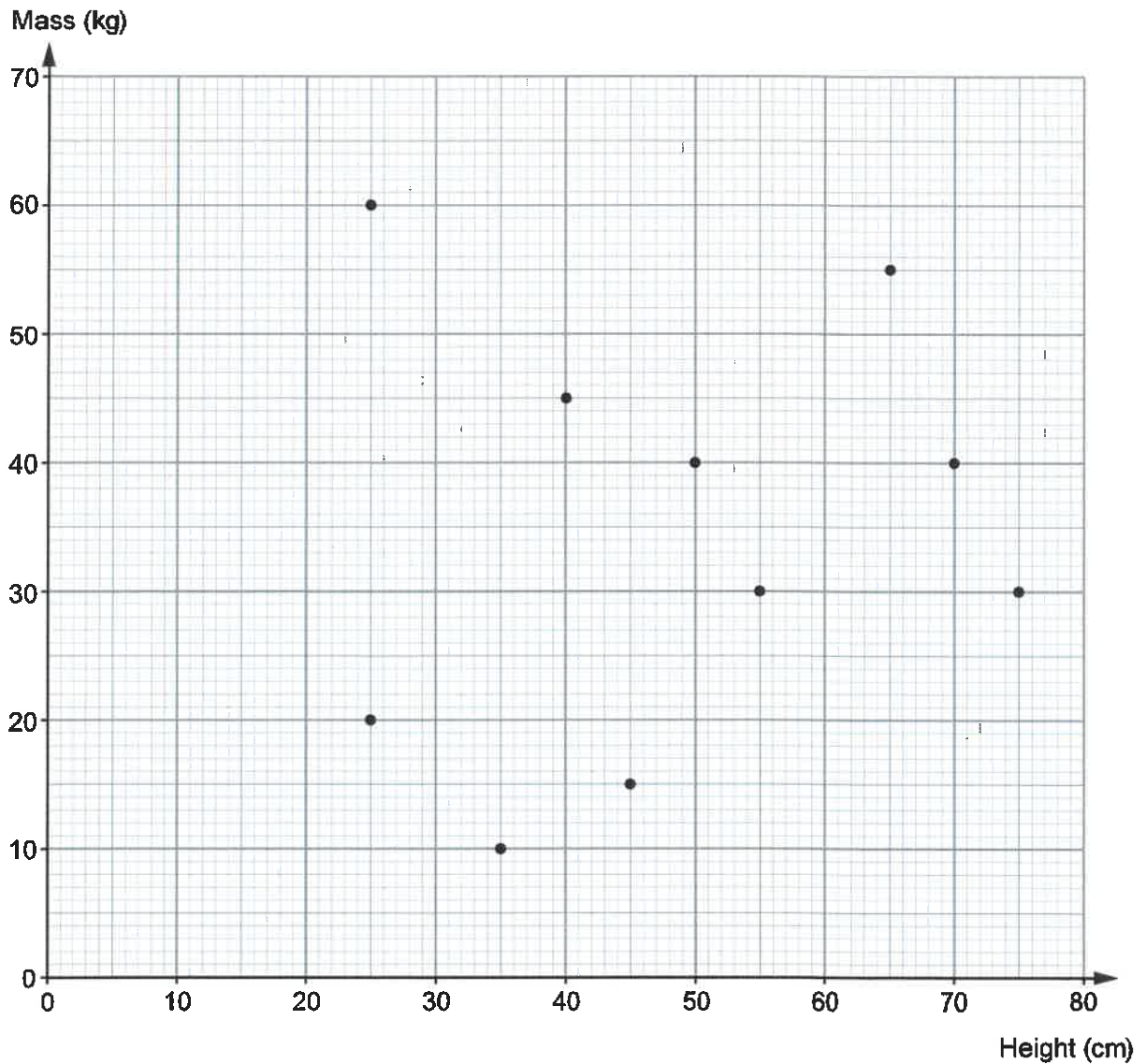
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4. A group of friends measured the heights and masses of their pets. The scatter diagram shows the results.



- (a) Describe the correlation shown by this scatter diagram. [1]

- (b) The friends notice that the tallest pet has the same mass as another pet. What is the height of this other pet? [1]

..... cm



5. Glenda plans to drive from Flint to Cardiff.

On a long journey, her average speed is usually 42 mph.

Last time she drove from Flint to Cardiff it took her  $3\frac{1}{2}$  hours.

(a) Use this information to calculate the distance between Flint and Cardiff. [2]

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..... miles

(b) Give a possible reason why your answer in (a) is only an estimate of the distance between Flint and Cardiff. [1]

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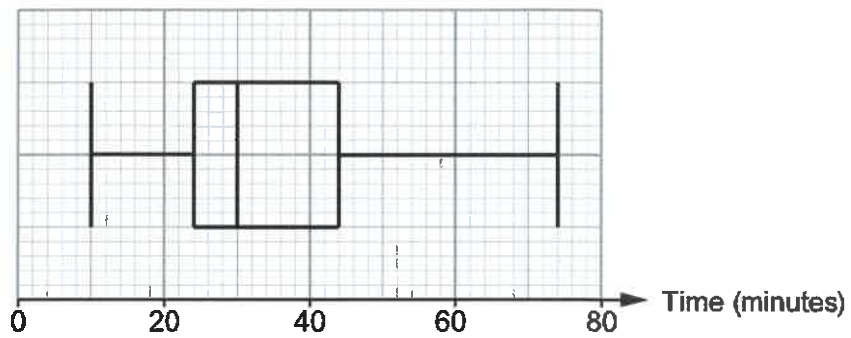
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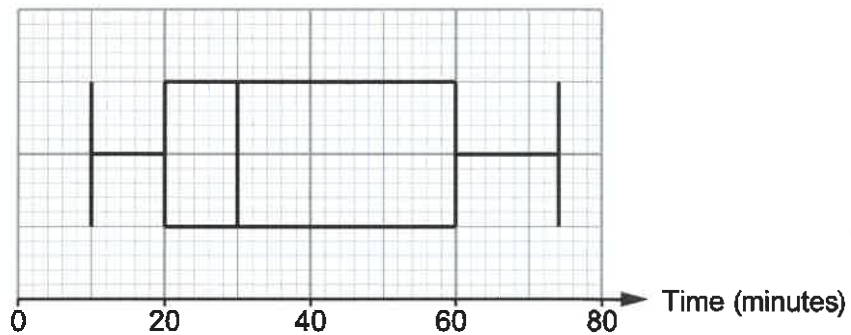


14. There are two entrances to a stadium, North Entrance and South Entrance. At each entrance, 3000 people queued to pass through security. The length of time each of these people spent in the queue was recorded. The box-and-whisker diagrams show the results.

North Entrance



South Entrance



- (a) At the **North Entrance**, how many people had to queue for more than 44 minutes? You must show all your working. [2]

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Number of people is .....



- (b) For the **South Entrance**, calculate an estimate of the number of people who had to queue there for between 40 and 60 minutes.  
You must show all your working. [3]

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Number of people is .....

- (c) At which entrance did the security team seem to be more effective at getting people into the stadium quickly?  
You must give a reason for your answer. [1]

North Entrance       South Entrance

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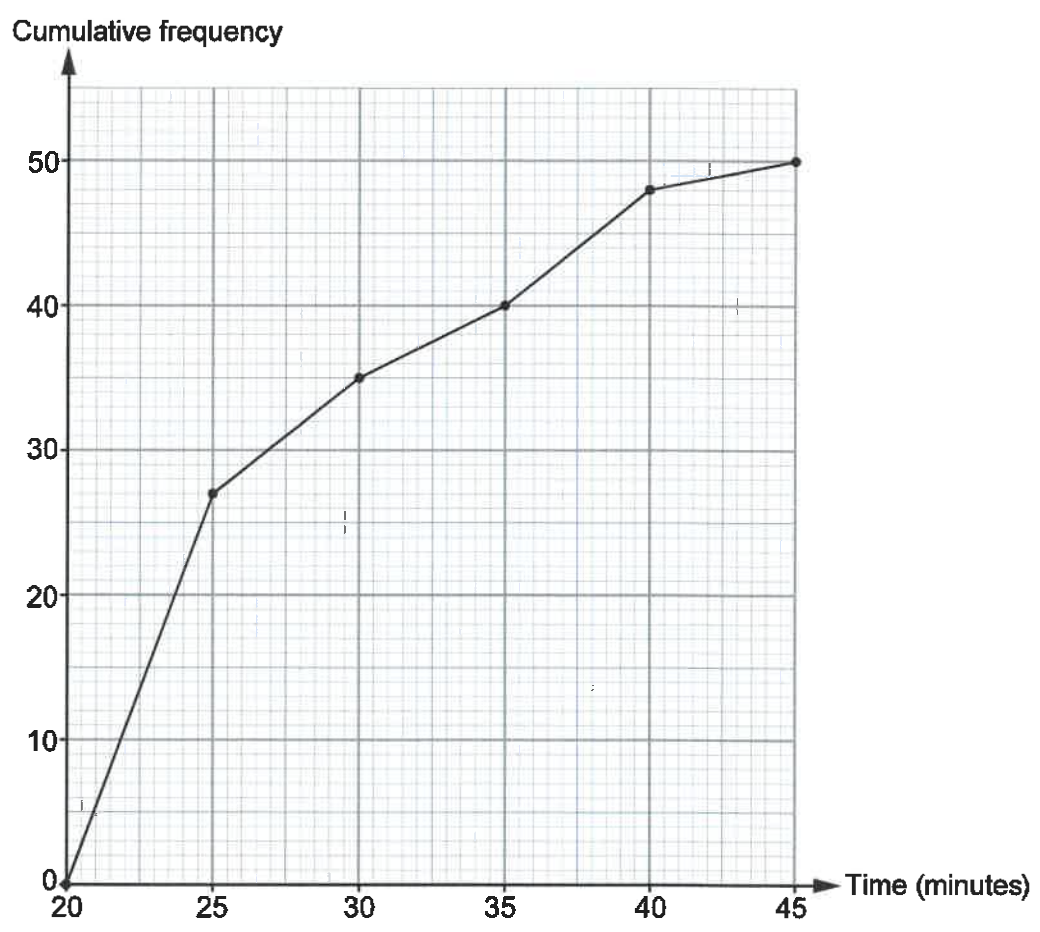
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13. This year, 50 runners took part in a 5 km race in the Brecon Beacons. All 50 runners finished the race.

The cumulative frequency diagram below shows the times taken by the runners to finish the race.



(a) Which is the modal group?  
Circle your answer.

[1]

20 to 25 minutes

25 to 30 minutes

30 to 35 minutes

35 to 40 minutes

40 to 45 minutes

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.....



(b) Is it certain that the last runner's finish time was 45 minutes?  
You must give a reason for your answer. [1]

Yes  No

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(c) The organisers hoped that 80% of the runners would finish the race within 30 minutes.  
Complete the following two statements. [2]

'..... % of runners finished the race within 30 minutes.'  
'80% of runners finished the race within ..... minutes.'

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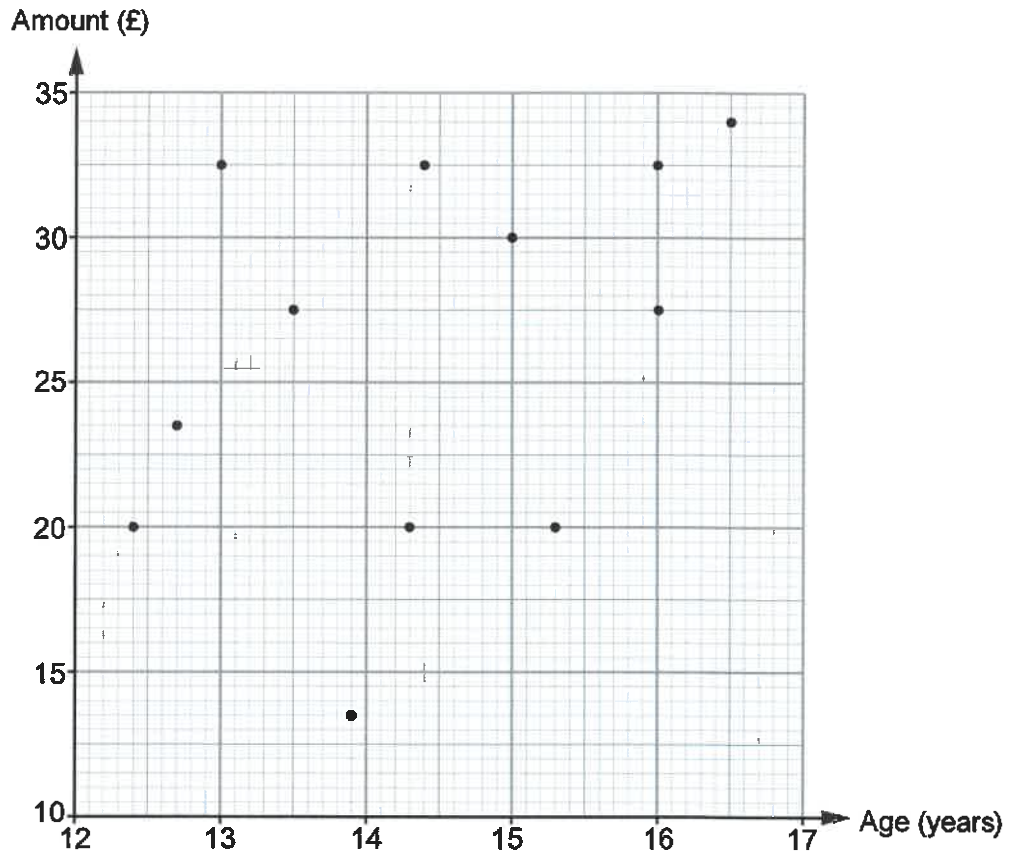
(d) Last year, the median finish time was 26 minutes.  
By how many minutes was the median time better this year?  
You must show all your working. [2]

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5. Lekan's parents have complained that they are paying too much towards his mobile phone bill each month.

Lekan decides to ask a number of students in school how much their parents or carers pay towards their mobile phone bills each month. He displays the results in a scatter diagram. These include his own results.



- (a) Lekan's parents want to know the names of some of these students.

The two 15-year-old students are Harriet and Eleri.  
Eleri is older than Harriet.

Gwilym and Aled's parents each pay £27.50 per month.  
Aled is younger than Gwilym.



(i) Complete each of the following statements. [2]

'Eleri's parents or carers pay £ ..... each month towards her mobile phone bill.'

'Harriet's parents or carers pay £ ..... each month towards her mobile phone bill.'

(ii) Complete each of the following statements. [3]

'Gwilym is ..... years ..... months old.'

'Aled is ..... years ..... months old.'

(b) Lekan's parents pay £32.50 per month towards his mobile phone bill. He is the youngest of the 3 students who receive £32.50 per month towards their mobile phone bill.

(i) How old is Lekan? [1]

(ii) Do you think Lekan's parents are right to complain that they are paying too much towards his mobile phone bill each month? You must use the scatter diagram to give a reason for your answer. [1]

Yes  No

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2. Jane carried out a survey.  
She asked 40 people to choose their favourite TV channel.  
Their answers are shown below.

|           |           |           |       |           |
|-----------|-----------|-----------|-------|-----------|
| BBC1      | S4C       | ITV 1     | BBC1  | Channel 5 |
| ITV 1     | BBC2      | Channel 5 | ITV 1 | BBC1      |
| Channel 5 | BBC1      | Channel 5 | ITV 1 | S4C       |
| S4C       | ITV 1     | BBC2      | BBC1  | Channel 5 |
| BBC2      | BBC2      | ITV 1     | ITV 1 | BBC1      |
| BBC2      | ITV 1     | S4C       | BBC1  | ITV 1     |
| BBC1      | S4C       | ITV 1     | ITV 1 | BBC1      |
| ITV 1     | Channel 5 | BBC1      | S4C   | Channel 5 |

- (a) Draw a **vertical line diagram** to display Jane's data.  
Use the square grid on the opposite page.

[4]

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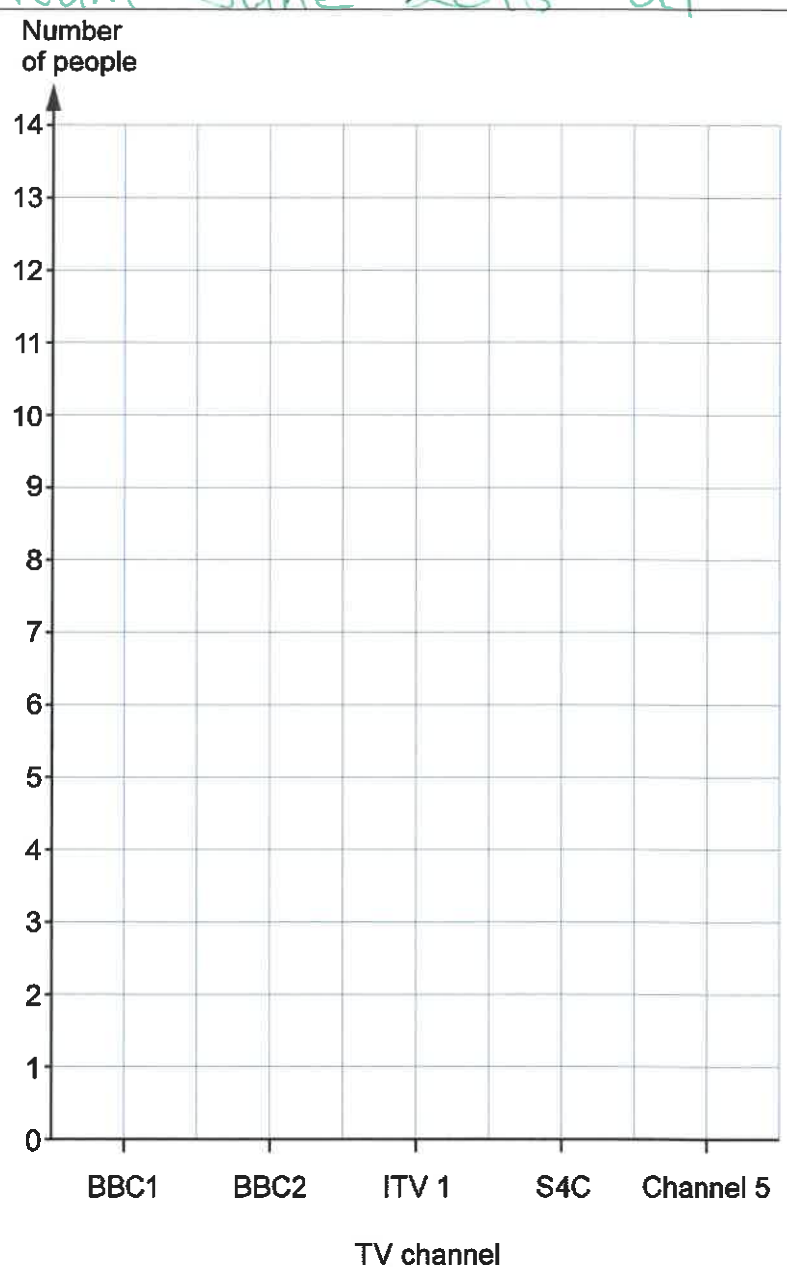
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(b) How can you check that you have included all of Jane's data? [1]

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(c) What is the modal TV channel? [1]

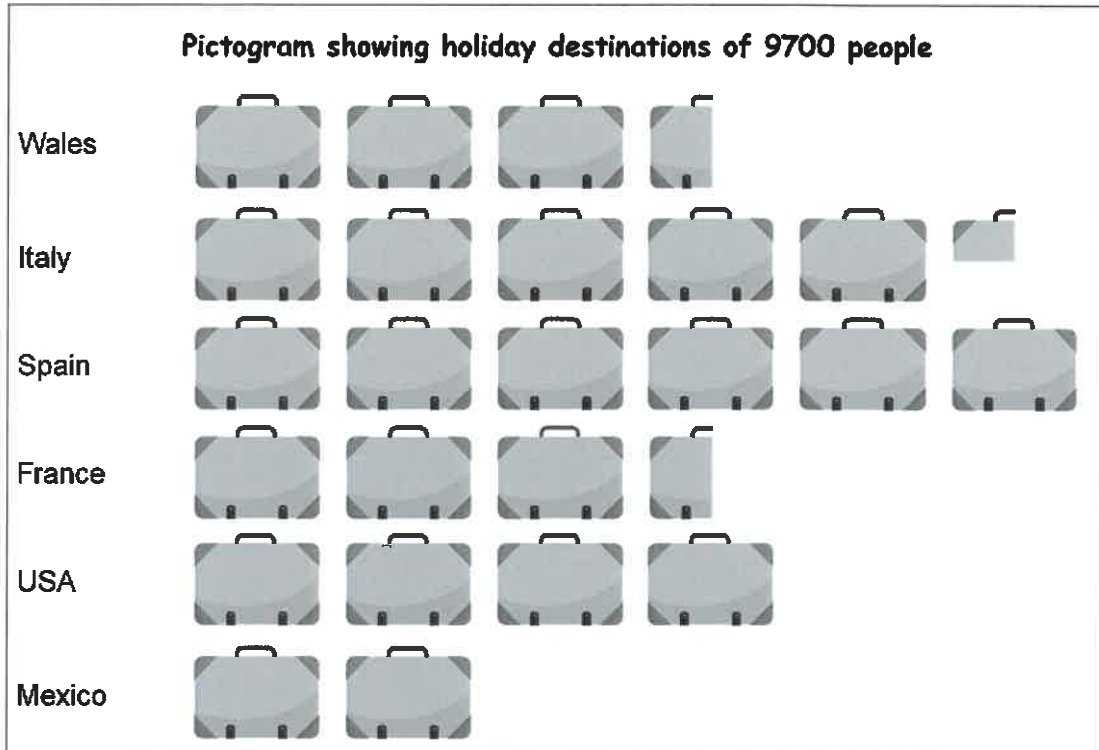
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07



5. Mena is going on holiday. She hasn't decided where to go yet. In a travel brochure, Mena sees a pictogram showing the holiday destinations of 9700 people.



(a) Complete the key for the pictogram.

[3]



represents ..... people

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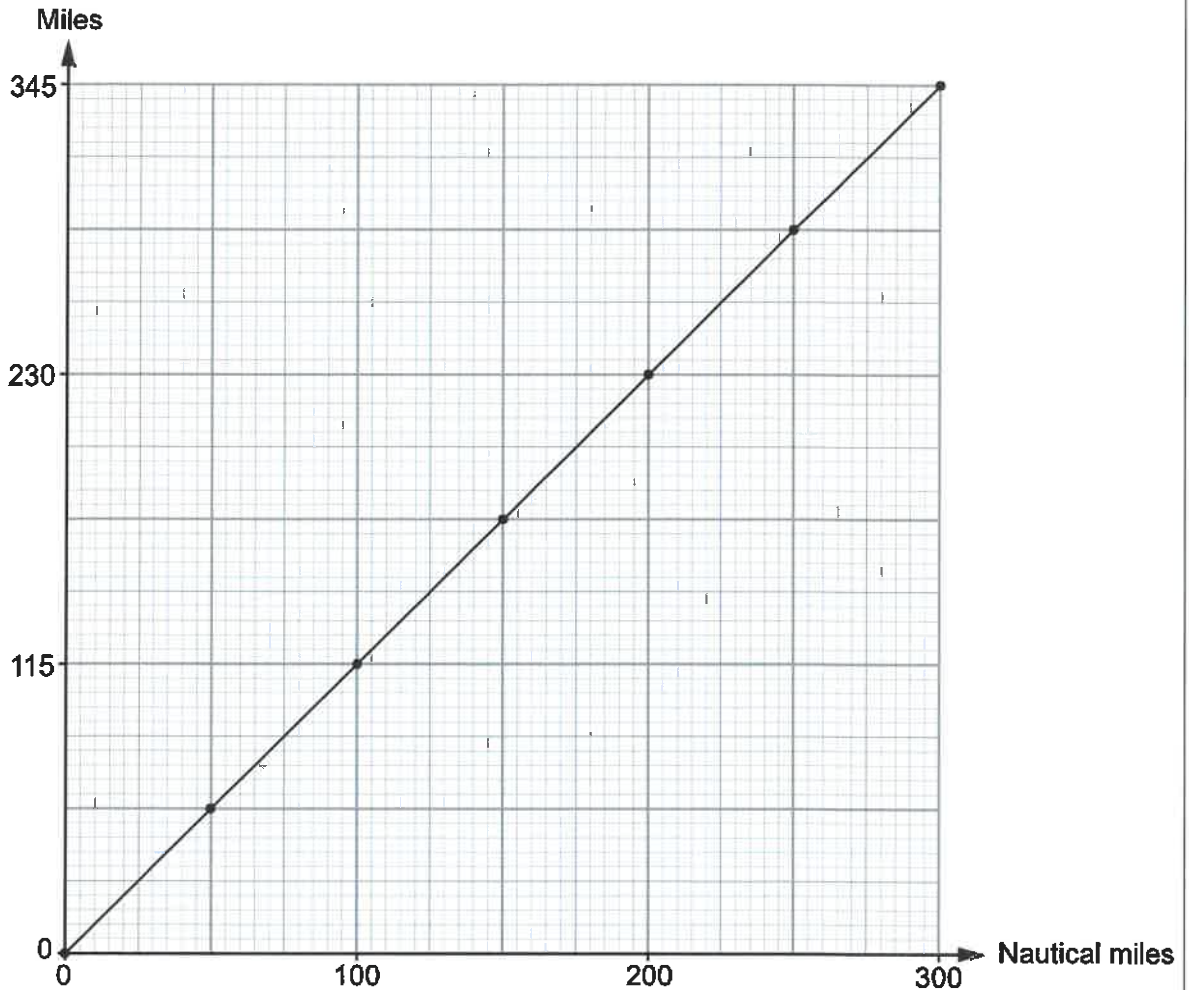
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1. Maxim is doing a project on shipping. He draws and uses his own conversion graph to convert between nautical miles and miles.



- (a) What is 50 nautical miles converted into miles?  
Circle your answer.

[1]

55                      56.5                      57.5                      58.5                      59.5

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- (b) Complete the following statement.

800 nautical miles is equal to ..... miles.

[2]

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Examiner only

1. In a survey, 720 students were asked if they preferred to take part in *gym activities*, *team sports* or *individual sports*. They were asked to choose just one of these options. The results are displayed in the pie chart below.



- (a) How many students selected *individual sports*? Circle your answer. [1]

90                      180                      270                      405                      540

- (b) Carwyn plans to split *team sports* on the pie chart into *football* and *other team sports*. Of the students who selected *team sports*,  $\frac{2}{5}$  said their preferred team sport was *football*. What angle should Carwyn draw to represent *football*? [3]

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Angle is ..... °

- (c) 720 students took part in the survey. Only 45% were female. How many males took part in the survey? [2]

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Number of males is .....



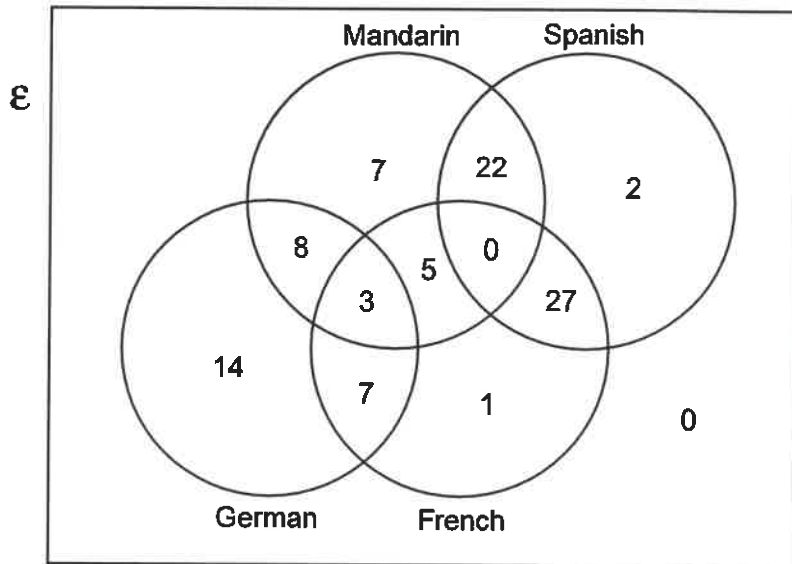
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2. The Headteacher of Ysgol Maes Newydd gave *option forms* to all Year 9 pupils.

The form asked which foreign languages the pupils would like to study in Year 10.

There were 4 languages listed on the form: French, German, Spanish and Mandarin.  
The pupils could select as many of the languages as they wished.  
All pupils completed and returned the *option form*.

The Headteacher displayed the results in a Venn diagram, as shown below.



(a) How many pupils did not select at least one of the four languages?  
Circle your answer.

[1]

- 0      1      3      5      7

(b) How many pupils are there in Year 9?  
Circle your answer.

[1]

- 92      94      96      98      100

(c) How many pupils selected only one language?

[1]



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only

(d) Which was the most popular language selected?  
You must show all your working. [3]

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(e) The Headteacher can offer only 2 out of these 4 languages in Year 10.  
She writes the timetable so that as many as possible of the pupils who chose 2 languages  
are able to study those 2 languages.  
Which two languages will the Headteacher offer in Year 10?  
You must show all your working and give a reason for your answer. [2]

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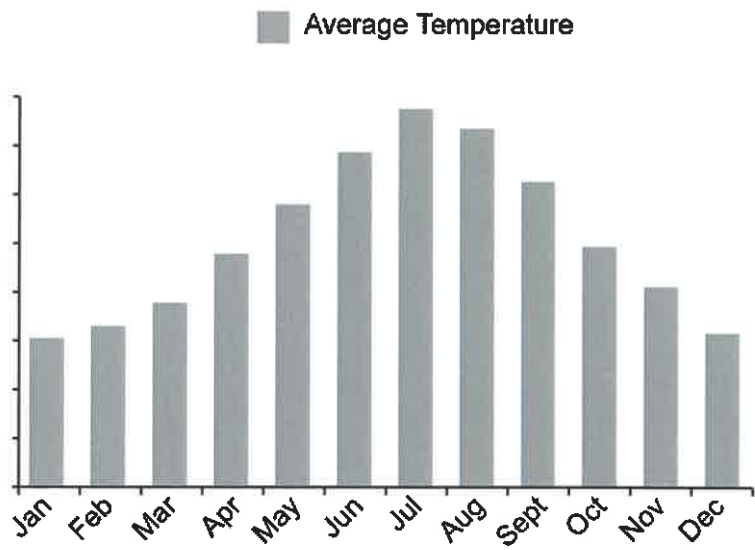
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05



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Examiner only

(c) Evan sees this graph on a website. It shows information about the weather in Larnaca.



Give one criticism of this graph.

[1]

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(d) Evan sees this information about the average monthly rainfall, in mm, in Larnaca.

| Month         | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Rainfall (mm) | 78  | 64  | 34  | 19  | 7   | 2   | 1   | 1   | 6   | 18  | 66  | 94  |

(i) Which of the words below best describes the chance that it will rain in Larnaca on any given day in August? Circle your answer. [1]

- certain      likely      even chance      unlikely      impossible

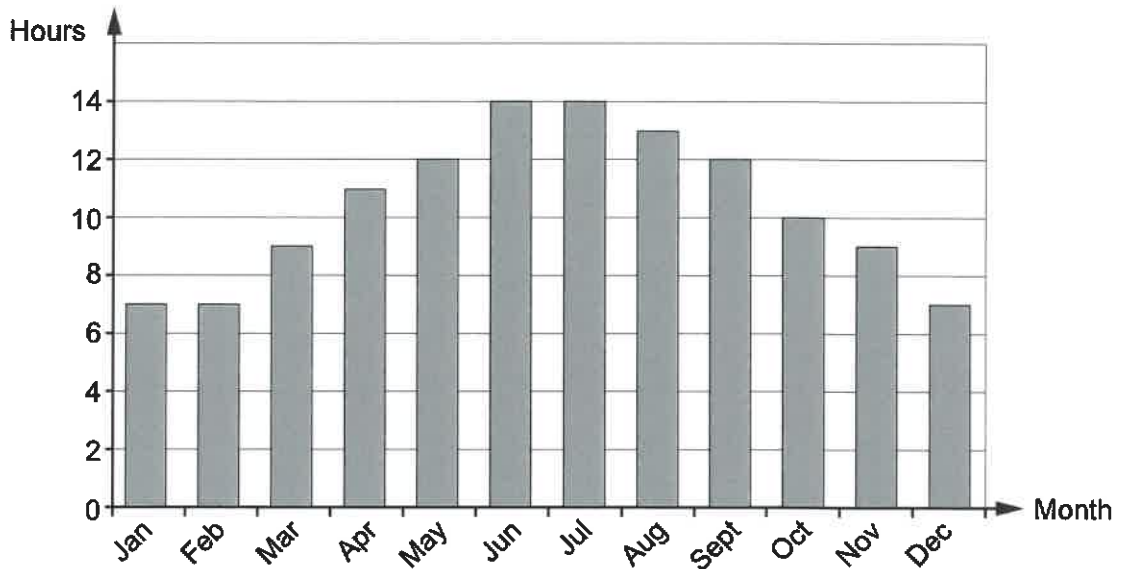
(ii) Which month has an average rainfall closest to 7 centimetres? Circle your answer. [1]

- January      February      May      September      November

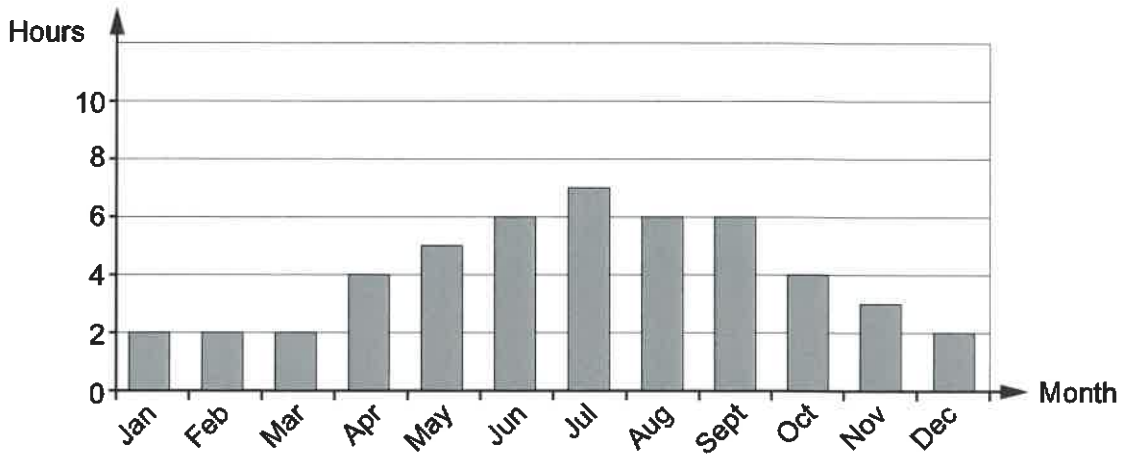


(e) Evan uses internet graphs to compare the average daily sunshine hours in Cardiff and Larnaca.

Average daily sunshine hours in Larnaca



Average daily sunshine hours in Cardiff



(i) In Larnaca, which month had an average of 11 daily sunshine hours? [1]

Month .....

(ii) Find the number of **extra** average daily sunshine hours in Larnaca compared with Cardiff in June. [2]

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Examiner  
only

(f) Evan sees this information about the **highest** daily temperature for each month in Larnaca last year.

| Month            | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Temperature (°C) | 17  | 17  | 19  | 23  | 25  | 30  | 32  | 33  | 30  | 32  | 27  | 17  |

(i) What is the median of these temperatures? [2]

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(ii) Explain why the mode of these temperatures is not suitable as an average. [1]

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3310U201  
07



3.



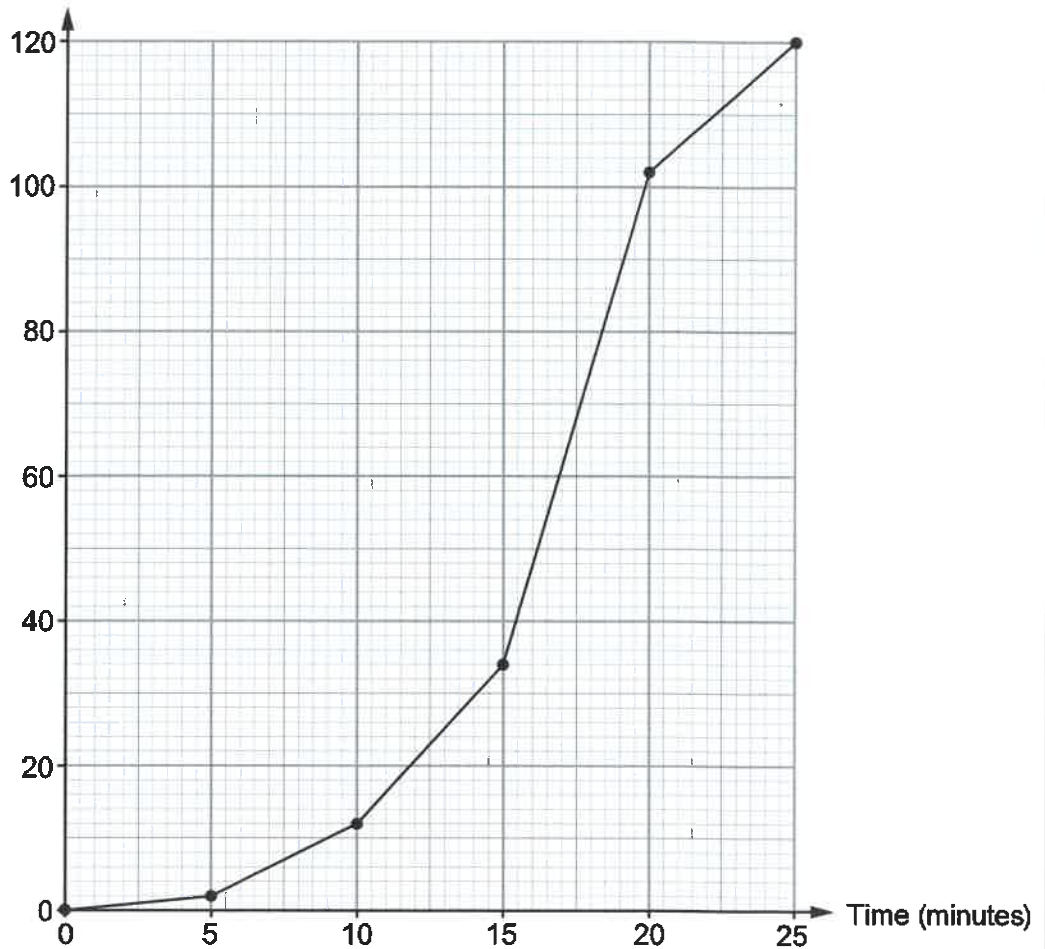
**Meirion's Window Cleaning Business**  
No job too small!  
Email: meirion@mwcb.cymru

Meirion is a window cleaner.

From Monday to Friday, he records how long he spends cleaning windows for each of his customers.

He draws a cumulative frequency diagram to display the findings.

Cumulative frequency



I+H Num Nov 2017<sup>9</sup> U1

Examiner only

- (a) (i) Use Meirion's cumulative frequency diagram to find the median and interquartile range of the times he spends cleaning windows for each of his customers. [3]

Median ..... minutes

.....

Interquartile range ..... minutes

- (ii) Meirion looks back at his raw data.  
He finds that the median is actually 17 minutes 30 seconds.  
Why is there a difference between the median from his cumulative frequency diagram and the actual median from his raw data? [1]

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- (b) Meirion is looking at the time it took to clean individual customers' windows.  
Find the number of customers whose windows took between 10 and 15 minutes to clean. [2]

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- (c) Meirion thinks that for approximately 80% of his customers, he cleaned their windows in less than 20 minutes.  
Is Meirion correct?  
You must show all your working. [3]

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3310U501  
08



1. (a) Ysgol Fron Isa and Ysgol Caewen are two very different high schools. One school is large, and in a rural area. The other is a small school in a town. The town in which the small school is situated has many traffic-free cycle routes.

All of the pupils in Years 7 to 10 were surveyed in both of these schools. They were asked the following questions.

Do you cycle to school? Yes  No

If you answered 'no', would you like to cycle to school? Yes  No

The results were displayed in graphs, as shown below.

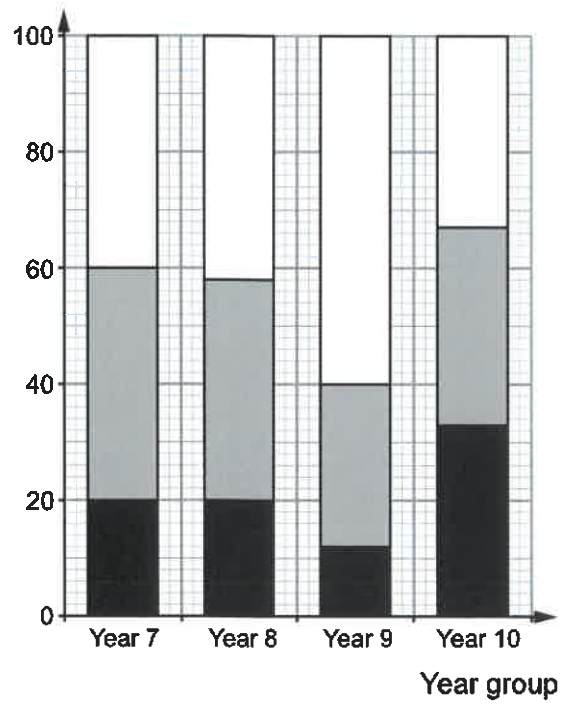
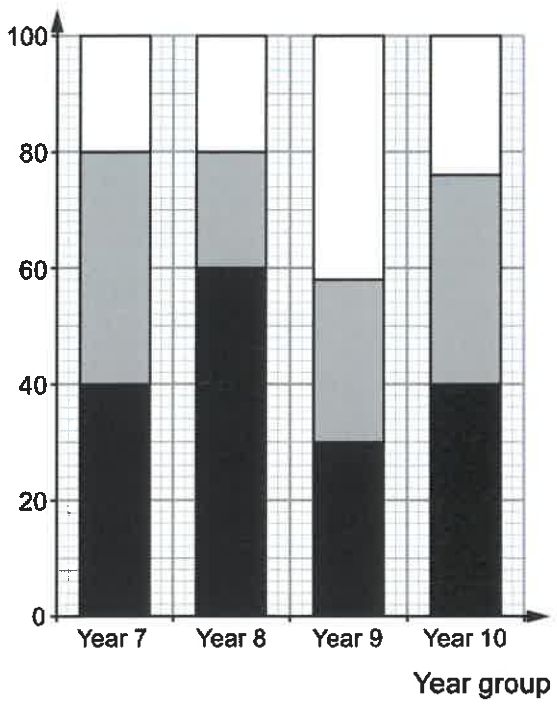
Key:  Cycle  Would like to cycle  Others

Ysgol Fron Isa

Ysgol Caewen

Percentage of pupils

Percentage of pupils



I+H Num Nov 2017 5 u1

Examiner only

- (i) Which school and year group has an approximately equal split between the 3 categories:
- pupils who cycle to school,
  - pupils who would like to cycle to school, and
  - other pupils?
- [1]

School: ..... Year Group: .....

- (ii) Circle either TRUE or FALSE for each of the following statements. [3]

|  |      |       |
|--|------|-------|
| There are definitely more pupils in Ysgol Fron Isa who cycle to school than in Ysgol Caewen. | TRUE | FALSE |
| Both schools have pupils in each year group with no interest in cycling to school.           | TRUE | FALSE |
| The questions asked were biased.   | TRUE | FALSE |
| Approximately 20% of the pupils surveyed in Ysgol Caewen cycle to school.                    | TRUE | FALSE |
| It is more likely that it is Ysgol Fron Isa that is the small school situated in a town.     | TRUE | FALSE |

- (b) In January 2011, there were 1200 miles of National Cycle Network (NCN) routes in Wales. In January 2016, there were 1400 miles of NCN routes in Wales.

- (i) If the number of miles of NCN routes in Wales were to continue to increase by the same number of miles per year, how many miles of cycle routes would there be in January 2018? [2]

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- (ii) Why is your answer in (i) unlikely to be an accurate estimate of the number of miles of NCN routes in Wales in January 2018? [1]

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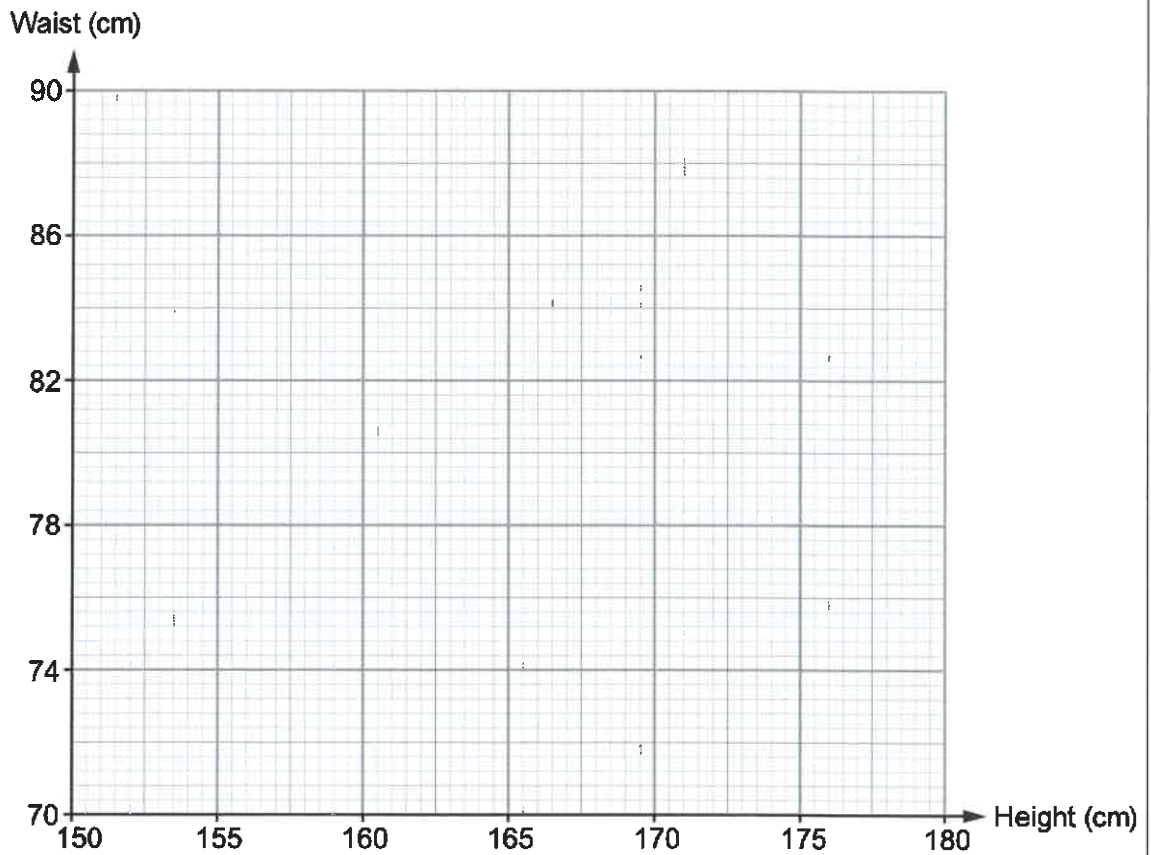


5. Ffion thinks that the taller you are, the greater your waist measurement will be. She recorded the height and waist measurements, in centimetres, for 6 people.

|             |     |     |     |     |     |     |
|-------------|-----|-----|-----|-----|-----|-----|
| Height (cm) | 170 | 152 | 174 | 155 | 178 | 162 |
| Waist (cm)  | 82  | 72  | 86  | 74  | 90  | 78  |

- (a) Draw a scatter diagram to display these measurements. Use the graph paper below.

[2]



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(b) Look at the results that Ffion has recorded for these 6 people.  
Do they appear to support her thinking?  
Give a reason for your answer.

[1]

Yes  No  Can't tell

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(c) Give one reason why using this scatter graph to estimate the waist measurement of other people is unlikely to give reliable results.

[1]

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11



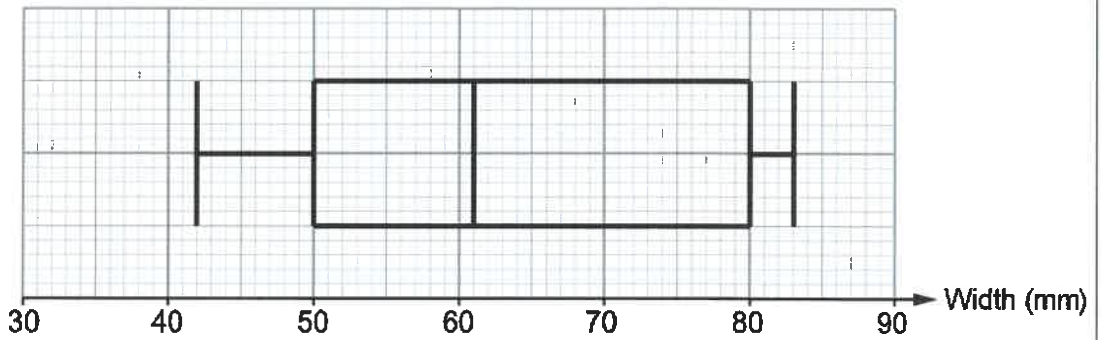


5. Lena has three apple trees in her garden. She has one Gala apple tree, one Orange Pippin tree and one Pink Lady tree. She picks 50 apples from each of the 3 trees. She records the width of each apple, as shown.

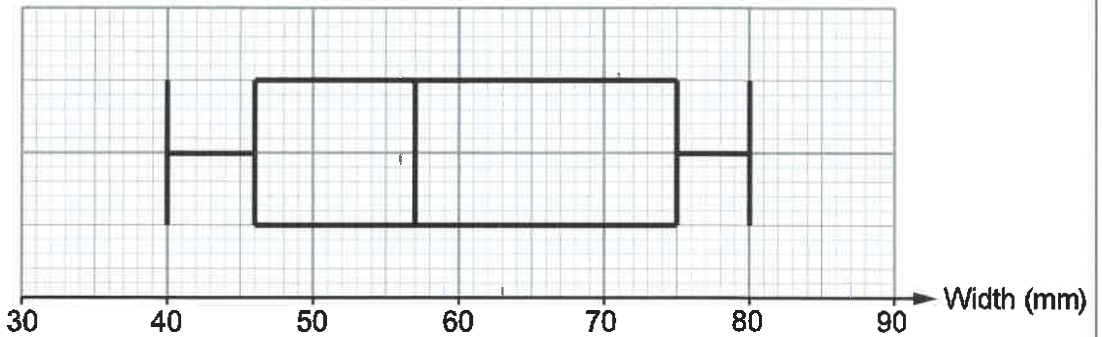


Lena constructs box and whisker diagrams for the widths of the apples collected from each of the three trees.

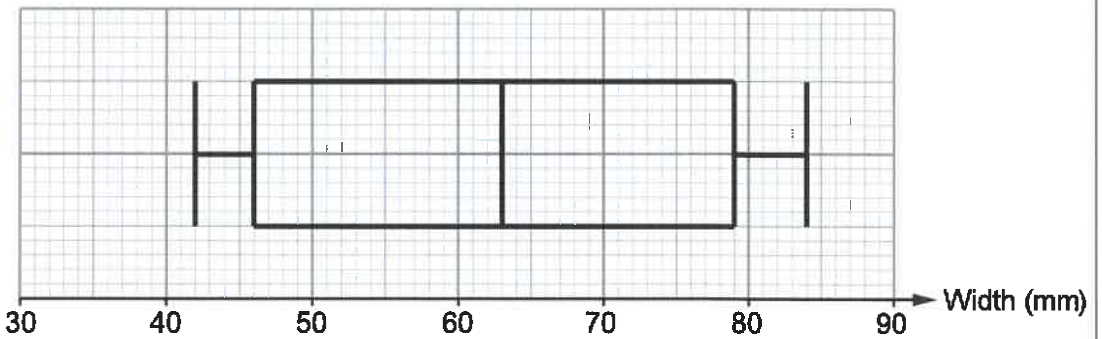
Gala apple tree



Orange Pippin apple tree



Pink Lady apple tree





(a) Complete each of the following statements.

(i) 'Apples from the ..... apple tree have the least median width.

The median width of apples recorded for this tree is ..... mm.' [1]

(ii) 'The range of the widths of apples recorded for the Gala apple tree is ..... mm.'

[1]

(iii) 'The ..... apple tree has apples with the greatest interquartile range of widths.

The interquartile range of the widths of apples recorded for this tree is ..... mm.'

[2]

(b) Which tree has a higher proportion of larger apples? You must give a reason for your answer.

[1]

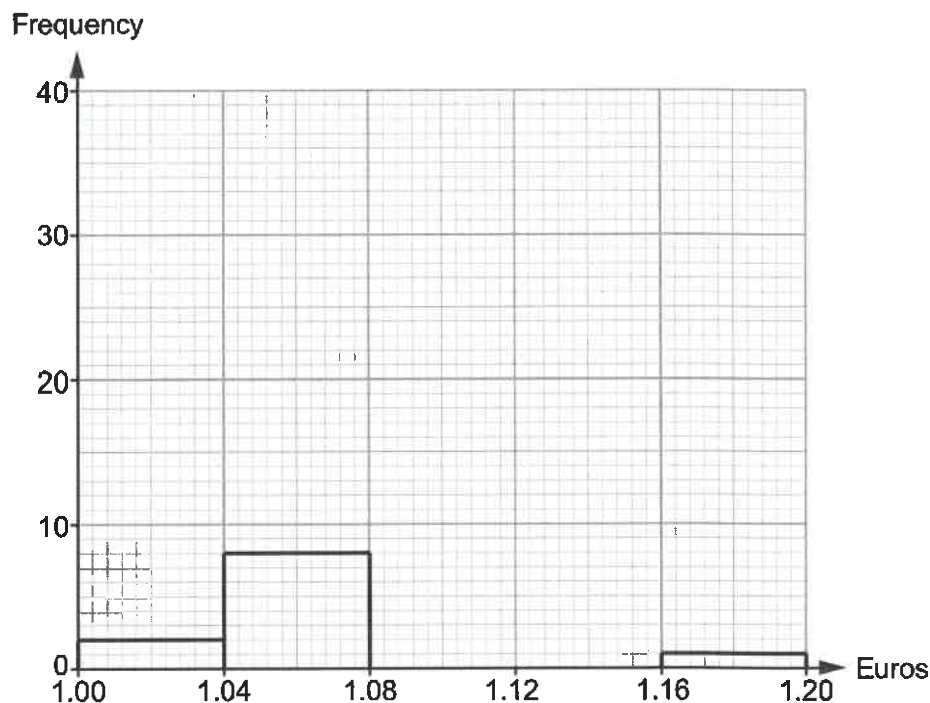
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- (d) Gareth looked at exchange rates for buying euros. He recorded the exchange rates for the previous 60 days, as shown below.

| $\text{£1} = b \text{ euros}$ | Frequency |
|-------------------------------|-----------|
| $1.00 \leq b < 1.04$          | 2         |
| $1.04 \leq b < 1.08$          | 8         |
| $1.08 \leq b < 1.12$          | 16        |
| $1.12 \leq b < 1.16$          | 33        |
| $1.16 \leq b < 1.20$          | 1         |

Gareth started to draw a frequency diagram to show this information.



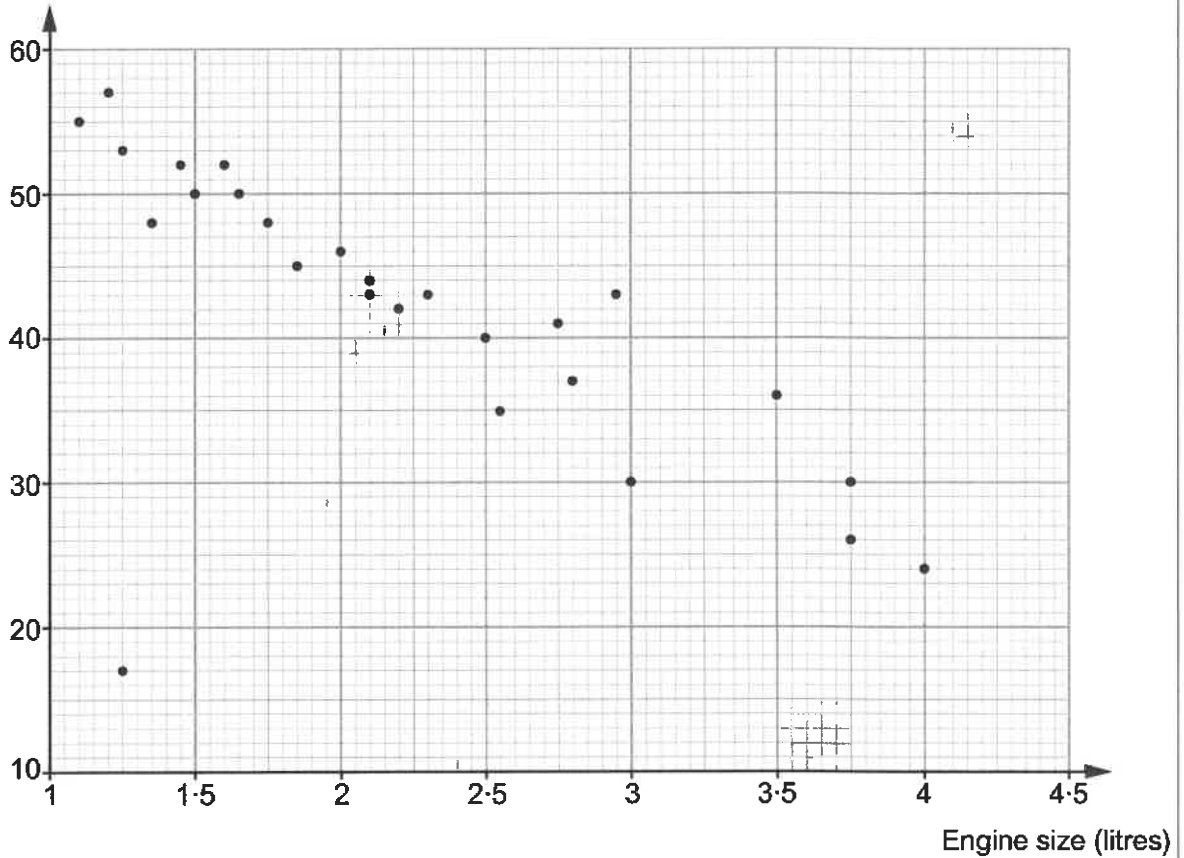
- (i) Complete the frequency diagram. [1]
- (ii) Which is the modal group? Circle your answer. [1]

60       $1.08 \leq b < 1.12$       33       $1.12 \leq b < 1.16$       16



4. The distance a car will travel using 1 gallon of fuel is called its fuel economy. The fuel economy of a number of cars with different engine sizes is shown below.

Fuel economy (miles per gallon)



Use the scatter diagram to answer the following questions.

- (a) State the fuel economy of the car with the largest engine size. [1]

Fuel economy ..... miles per gallon

- (b) State the engine size of the car with a fuel economy of 42 miles per gallon. [1]

Engine size ..... litres



(c) (i) Calculate the mean fuel economy of the 5 cars with the **smallest** engine sizes. [3]

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Mean fuel economy is ..... miles per gallon

(ii) Why is this not a suitable average for cars with engine sizes of less than 1.5 litres? [1]

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.....

(d) Draw, by eye, a line of best fit on the scatter diagram. [1]

(e) Siân says,

The scatter diagram is more reliable to estimate the fuel economy of cars with engine sizes less than 2.5 litres.

Do you think Siân is correct?

Yes  No  Don't Know

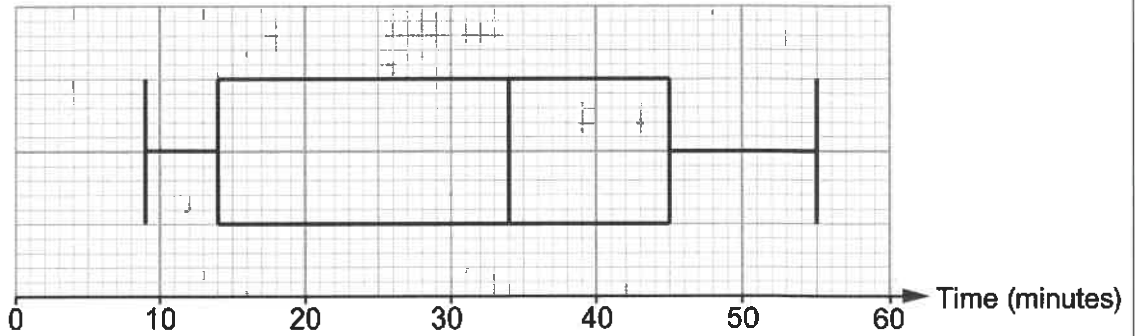
You must give a reason for your answer. [1]

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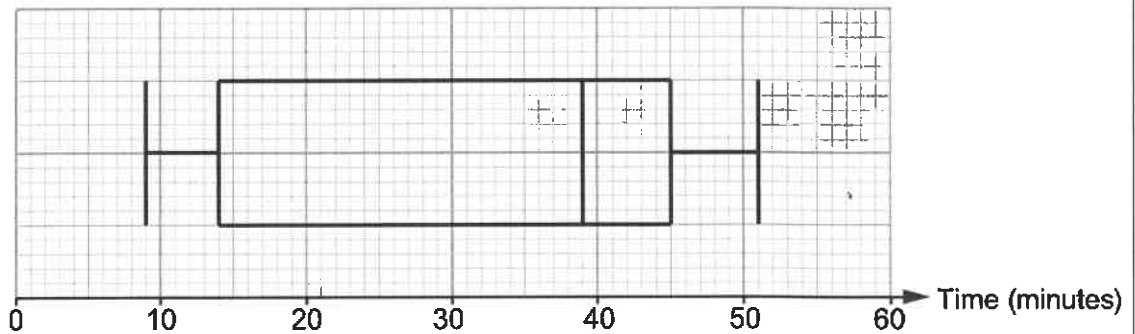


10. (a) Maesystrad, Rhewlteg and Glanmawr are three colleges. Each college recorded the times Year 12 students took to travel to college. The results are displayed in the box-and-whisker plots below.

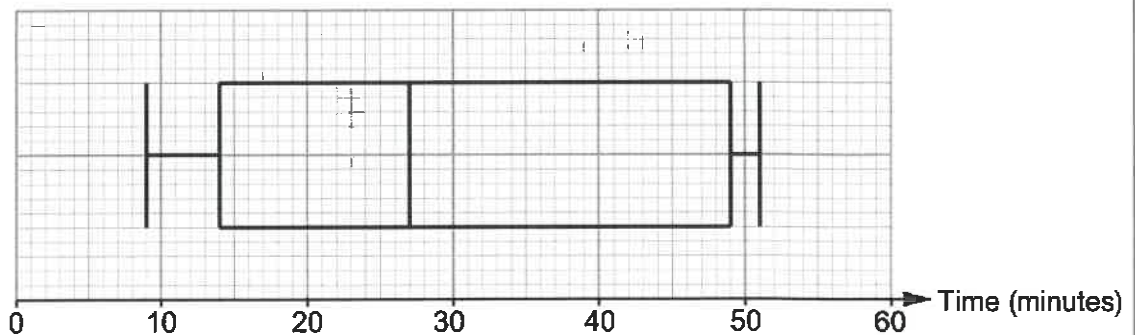
Maesystrad



Rhewlteg



Glanmawr



- (i) Which of the three colleges has the greatest range of times?  
What is the range of times for this college?

[1]

.....

.....

College ..... Range ..... minutes



(ii) On average, in which college did Year 12 students have the longest travel times? You must give a reason for your answer. [1]

College: .....

Reason: .....

(iii) Which college has the greatest difference between the median and the lower quartile? What is this difference? [1]

College ..... Difference ..... minutes

(iv) Which of the three colleges has the greatest number of Year 12 students? Give a reason for your answer. [1]

Maesystrad  Rhewlteg  Glanmawr  Don't know

Reason: .....

(b) At another college, Wynne College, there are 240 students in Year 12.

The interquartile range of the times taken for these students to travel to college is 32 minutes.

(i) How many of these students have travel times within this interquartile range? [1]

..... students

(ii) 75% of the Year 12 students at Wynne College take less than 55 minutes to travel to college. Complete the following statement.

'25% of the Year 12 students at Wynne College take less than

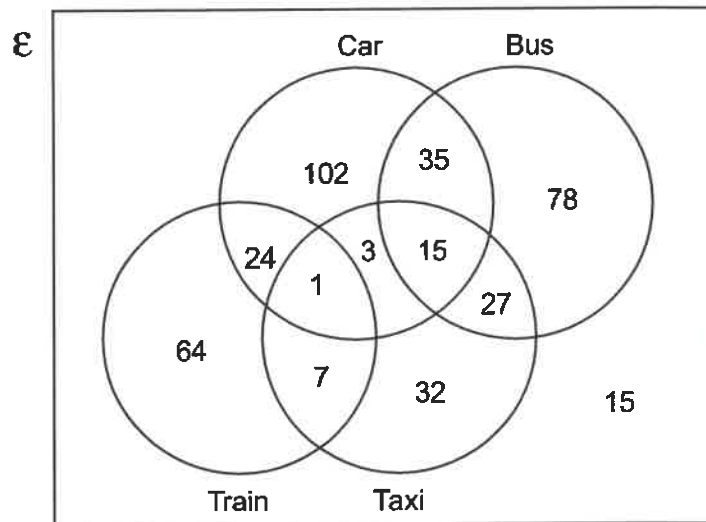
..... minutes to travel to college.' [1]



6.



- (a) Rhian carried out a survey before an international rugby match. She asked a number of Wales supporters how they travelled to the match. Rhian displayed her results in a Venn diagram, as shown below.



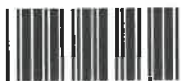
- (i) How many of these supporters' journeys included travel by both train and taxi? Circle your answer. [1]

1                      3                      7                      8                      10

- (ii) How many of these supporters' journeys included travel by car? Circle your answer. [1]

19                      78                      102                      180                      195

- (iii) Calculate the percentage of the number of supporters in the survey whose journeys did not include any travel by car, bus, train, or taxi. Give your answer correct to 1 decimal place. [4]

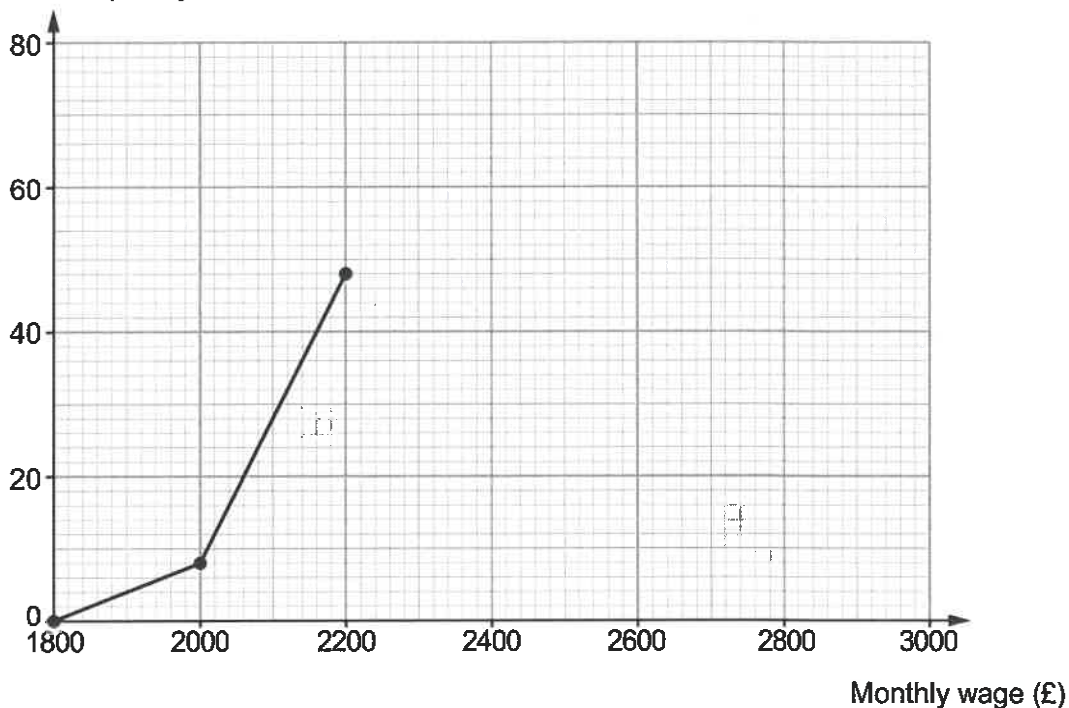


(b) *Maesteg Electrical* also specialises in wiring new houses. The monthly wages of all *Maesteg Electrical* employees are summarised in the frequency table below.

| Monthly wage, £ $x$  | Frequency |
|----------------------|-----------|
| $1800 \leq x < 2000$ | 8         |
| $2000 \leq x < 2200$ | 40        |
| $2200 \leq x < 2400$ | 24        |
| $2400 \leq x < 3000$ | 8         |

(i) Use the frequency table to complete the following cumulative frequency diagram to display the monthly wages of all *Maesteg Electrical* employees. [2]

Cumulative frequency



Use the cumulative frequency diagram to answer each of the following questions.

(ii) Which of the following is the best estimate for the median monthly wage of *Maesteg Electrical* employees? Circle your answer. [1]

- £2100      £2160      £2200      £2360      £3000

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- (iii) Calculate an estimate of the percentage of *Maesteg Electrical* employees who have a monthly wage of less than £2050.  
You must show all your working. [2]

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**END OF PAPER**

