GCSE

3310U10-1

FRIDAY, 20 MAY 2022 – MORNING

MATHEMATICS – NUMERACY

UNIT 1: NON – CALCULATOR

FOUNDATION TIER

1 hour 25 minutes plus your additional time allowance

THE USE OF A CALCULATOR IS NOT PERMITTED IN THIS EXAMINATION

Surname: _____

First name(s): _____

Centre Number: _____

Candidate Number: 0 _____

For Examiner's use only		
Question	**Maximum Mark**	**Mark Awarded**
1.	**2**	
2.	**11**	
3.	**3**	
4.	**10**	
5.	**5**	
6.	**4**	
7.	**6**	
8.	**8**	
9.	**8**	
10.	**3**	
Total	**60**	

ADDITIONAL MATERIALS

A ruler, a protractor and a pair of compasses may be required.

ITEMS INCLUDED WITH QUESTION PAPER

A separate Formula List.

A separate Diagram Booklet.

Model for Question 2 (b).

The Diagram Booklet MUST be handed in to the invigilators and sent for marking.

INSTRUCTIONS TO CANDIDATES

Use black ink, black ball – point pen, black felt tip or your usual method.

Write your name, centre number and candidate number in the spaces on the front cover.

Answer ALL questions.

Write your answers in the spaces provided.

If you run out of space, use the additional page(s) at the back of the booklet.
Question numbers must be given for the work written on the additional page(s).

Take π as $3{\cdot}14$

INFORMATION FOR CANDIDATES

You should give details of your method of solution when appropriate.

Unless stated, diagrams are not drawn to scale.

Scale drawing solutions will not be acceptable where you are asked to calculate.

The number of marks is given in brackets at the end of each question or part – question.

In question 2 (c), the assessment will take into account the quality of your linguistic and mathematical organisation, communication and accuracy in writing.

1. Look at the diagram for Question 1 in the separate Diagram Booklet.
The diagram shows a map of Caernarfon Castle on a coordinate grid.

Rachel visited Caernarfon Castle.

She used the coordinate grid to help her find the places that she wanted to see.

(a) The Chamberlain Tower is shown as point **H** on the grid.

What are the coordinates of the Chamberlain Tower?

Coordinates of the Chamberlain Tower

are (_____ , _____) [1 mark]

continued on the next page . . .

Question 1 continued

1. (b) The Granary Tower is shown as point N on the grid.

What are the coordinates of the Granary Tower?

Coordinates of the Granary Tower are (_____ , _____) **[1 mark]**

2. (a) Sandwiches are made for people at a community centre.

One Saturday, the following ingredients were used to make sandwiches for **10** people.

2 loaves of bread

50 grams of butter

3 tins of tuna

14 tomatoes

Next Saturday, there will be **40** people in the community centre.

Complete the list below to show the ingredients needed to make sandwiches for the **40** people.

Sandwiches for **40** people:

_____ loaves of bread

_____ grams of butter

_____ tins of tuna

_____ tomatoes

Question 2 (a) continued

SPACE FOR WORKING

[2 marks]

continued on the next page . . .

Question 2 continued

2. (b) Ask for the model for Question 2 (b).

The model is NOT made to scale.

The model represents a tin of tuna.

What is the best description for the shape of the tin of tuna?

Circle your answer.

Cuboid
Cylinder
Cube
Sphere
Cone

[1 mark]

continued on the next page . . .

Question 2 continued

2. (c) IN THIS PART OF THE QUESTION, YOU WILL BE ASSESSED ON THE QUALITY OF YOUR ORGANISATION, COMMUNICATION AND ACCURACY IN WRITING.

The local drama group is putting on a show in the community centre hall.

The hire charge for the hall is £10 per hour.

The hall will be needed from 17:00 to 22:00

The total costs of the event are:

- **hire of the hall**
- **costumes: £250**
- **printing tickets: £60**
- **sound and lighting equipment: £400**

continued on the next page . . .

Question 2 (c) continued

Tickets for the show are sold for £8 each.

What is the smallest number of tickets that must be sold so that the drama group does not make a loss when putting on the show?
You must show all your working.

[6 marks + 2 marks OCW]

3. Rhodri is organising his son's birthday party. He decides to give every child a party bag.

There will be 19 children at the party.

A party bag costs £2.98 to produce.

(a) ESTIMATE how much Rhodri will spend on producing party bags.

[2 marks]

continued on the next page . . .

Question 3 continued

3. (b) Is your estimate an underestimate or an overestimate?

Underestimate ☐

Overestimate ☐

Can't tell ☐

Give a reason for your answer.

_____

_____

_____

[1 mark]

4. Gary works at a garage.

(a) (i) Mr Morgan wants Gary to service his car next week.

This service will take 2 hours.
Mr Morgan will leave his car at the garage before 09:00
He needs to collect his car before 12:30 on the same day.

Look at the timetable for Question 4 (a) (i) in the separate Diagram Booklet.
The shaded hours show the times when Gary is already booked to service other cars next week.

Gary does not work during his lunch break, which is between 12:00 and 13:00 every day.

continued on the next page . . .

Question 4 (a) (i) continued

When is the earliest that Gary could start the service for Mr Morgan? Give the day and the time.

Earliest day and time that Gary could start the service:

Day _____

Time _____

[2 marks]

continued on the next page . . .

Question 4 (a) continued

4. (a) (ii) When Gary spends more than 15 hours servicing cars in a week, he gets a bonus in his wages.
The bonus is £8 for each extra hour he spends servicing cars.
Mr Morgan's service is the only service added to Gary's timetable for next week.
Calculate the total bonus that Gary will get in his wages.
You must show all your working.

[2 marks]

continued on the next page . . .

Question 4 continued

4. (b) On Tuesday, 7 cars have a service in the garage.

For each service, 4·5 litres of oil are needed.

Another 6 litres of oil are used for all the other jobs in the garage.

What is the total amount of oil needed on Tuesday?

[2 marks]

continued on the next page . . .

Question 4 continued

4. (c) Gary thinks that 4·5 litres is the same as 450 millilitres.

He is incorrect.

Change 4·5 litres to millilitres.

4·5 litres is the same as _____ millilitres.

_____

_____

_____

[1 mark]

continued on the next page . . .

Question 4 continued

4. (d) The garage doorway has a height of 2·3 m.

Mr Khan would like to have his campervan serviced.

Look at the diagram for Question 4 (d) in the separate Diagram Booklet.
Mr Khan's campervan is shown in the diagram. The scale of the picture is

1 cm REPRESENTS 0·2 m.

Find the actual HEIGHT of the campervan in metres.
Decide whether or not the campervan will fit under the garage doorway.
You must show all your working.

Actual height of the

campervan = _____ metres

Will the campervan fit under the doorway?

Yes ☐ **No** ☐

[3 marks]

5. One of the events in the World Athletics Championships is the men's long jump.

In the final, the top 8 competitors are allowed 6 jumps each.

The person who jumps the furthest, out of all the jumps, wins the competition.

Look at the scoreboard for Question 5 in the separate Diagram Booklet.
The scoreboard shows the results of the 2019 competition.
All the measurements are in metres.

A foul jump is recorded as X.
When a competitor decides not to jump, it is recorded with a dash (–).

The length of Henderson's 4th jump is missing from the scoreboard.

continued on the next page . . .

Question 5 continued

5. (a) Which competitor was in the lead after all the competitors had completed their 1st jump?

_____

_____

[1 mark]

(b) The length of Henderson's 4th jump was 7 metres and 3 centimetres. How should this be recorded on the scoreboard?

_____

_____

[1 mark]

continued on the next page . . .

Question 5 continued

5. (c) What is the difference between the lengths of Cáceres's 2nd and 5th jumps?

_____

_____

_____

_____

_____

[2 marks]

(d) Complete the table below to show who came 1st, 2nd and 3rd at the end of the competition.

Position	Name
1st	
2nd	
3rd	

[1 mark]

6. Look at the information provided for Question 6 in the separate Diagram Booklet.

(a) Dewi parks his car in Castell Car Park.

He parks for 2 hours 30 minutes.

How much should Dewi pay?

Circle your answer.

£3.60	**£3.40**	**£3.20**	**£3.80**	**£6.00**

[1 mark]

continued on the next page . . .

Question 6 continued

6. (b) Elin paid £5.80 to park her car in Castell Car Park.

What is the maximum length of time that Elin has paid for?

Give your answer in hours and minutes.

You must show all your working.

_____

_____

_____

Maximum length of time is

_____ hours _____ minutes

[3 marks]

7. Look at the diagram for Question 7 in the separate Diagram Booklet.
The diagram shows a frequency diagram.

Rodney records how much energy, in calories, different energy bars provide.
Each energy bar has a mass of 35 g.

Rodney draws this frequency diagram to display his findings.
He uses groups of width 10 calories:

100 ≤ energy < 110,

110 ≤ energy < 120,

…… ,

140 ≤ energy < 150,

(a) Which is the modal group?

_____

_____

[1 mark]

continued on the next page . . .

Question 7 continued

7. (b) What fraction of the energy bars provide less than 130 calories?

_____

_____

_____

_____

_____

[3 marks]

continued on the next page . . .

Question 7 continued

7. (c) Consider ONLY the energy bars providing 130 calories or more.

What percentage of these energy bars provide 140 calories or more?

_____

_____

_____

_____

_____

[2 marks]

8. Evans Grocery sells bags of frozen peas.

Cost of small bag (400 g) = 80p
Cost of large bag (1000 g) = £1.80

(a) Look at the diagram for Question 8 (a) in the separate Diagram Booklet.
The diagram is a pie chart.

The pie chart shows information about the number of bags of frozen peas that were sold last month.

A total of 720 bags of frozen peas were sold last month.
Calculate the total cost of the sales of the frozen peas.

[6 marks]

continued on the next page . . .

Question 8 continued

8. (b) Which of the two sizes of bags of peas offers the better value for money?

You must show all your working.

[2 marks]

9. Look at the diagram for Question 9 in the separate Diagram Booklet.

The diagram is a scatter diagram.

Myra recorded the wingspan and mass of a number of birds.

Her results are shown in the scatter diagram.

(a) The wingspan of one of the birds shown in the scatter diagram is 30 cm.

What is the mass of this bird?

Mass is _____ g

[1 mark]

continued on the next page . . .

Question 9 continued

9. (b) Two of the birds shown in the scatter diagram have a mass of 5 g. What is the difference between the wingspans of these two birds?

_____

_____

Difference between the wingspans is

_____ **cm**

[2 marks]

continued on the next page . . .

Question 9 continued

9. (c) Use $30\text{ cm} \approx 12$ inches to answer this question.

Find the wingspan of the bird with a mass of $8{\cdot}5\text{ g}$.

Give your answer in INCHES.

_____

_____

_____

_____

_____

_____

Wingspan is _____ INCHES

[3 marks]

continued on the next page . . .

Question 9 continued

9. (d) What type of correlation does this scatter diagram show?

_____

_____

[1 mark]

(e) Use the scatter diagram to estimate the wingspan of a bird with a mass of 12 g.

Wingspan is _____ cm

[1 mark]

10. People travel by bus or by train from Hiraddug Station.

On Tuesday, 420 people travelled by bus from the station.

Of the 420 people who travelled by bus from the station, 35% had a travel pass.

Calculate the number of people who travelled by bus and did NOT have a travel pass.

[3 marks]

END OF PAPER

TOTAL 60 MARKS

Question number	Additional pages, if required. Write the question number(s) in the left - hand margin.

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MATHEMATICS – NUMERACY

UNIT 1: NON – CALCULATOR

FOUNDATION TIER

The Diagram Booklet MUST be handed in to the invigilators and sent for marking.

Diagram Booklet

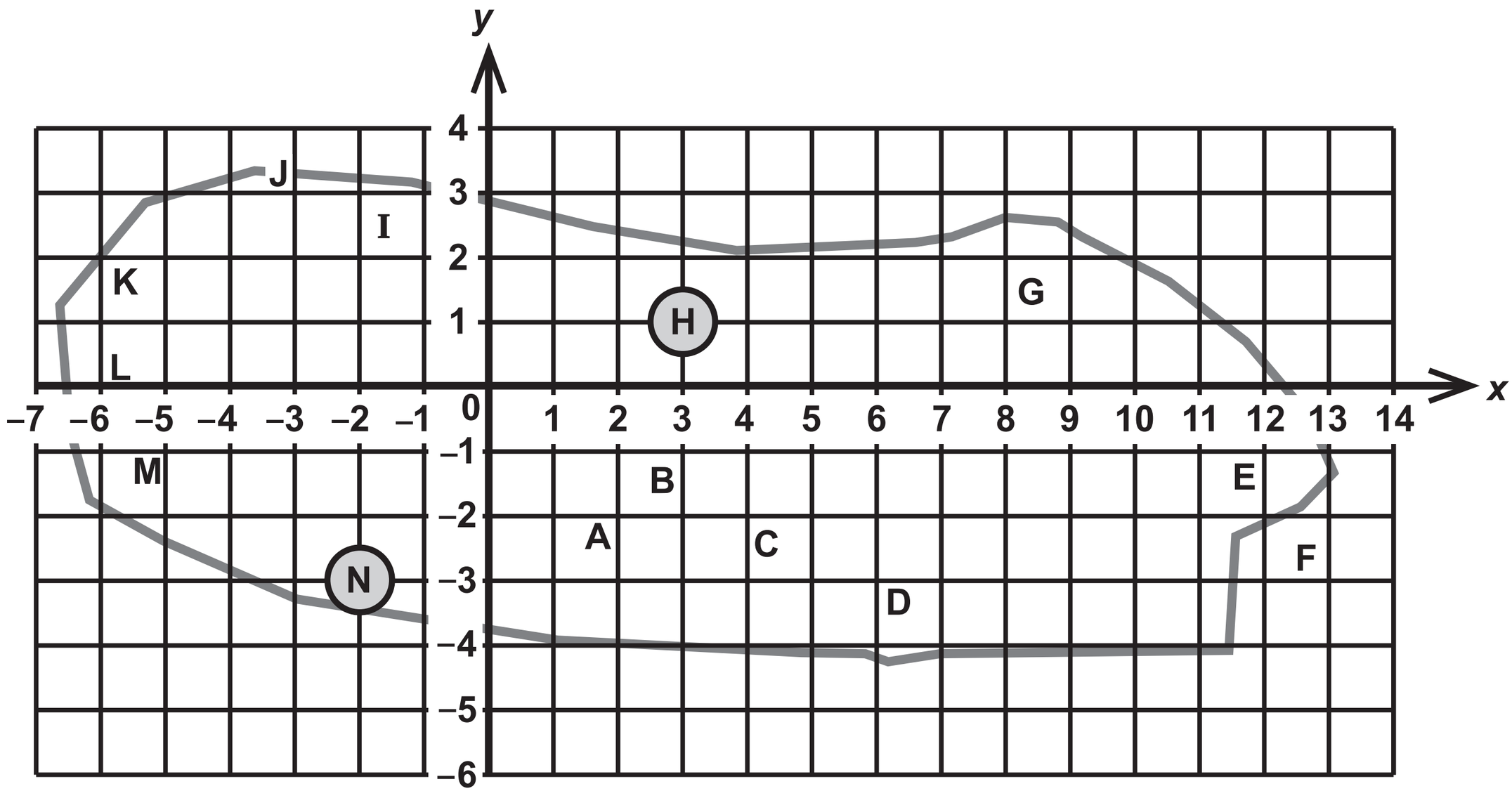
Surname: _____

First name(s): _____

Centre Number: _____

Candidate Number: 0 _____

Question 1


y
x
J
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−1
1
2
3
4
5
6
7
8
9
10
11
12
13
14

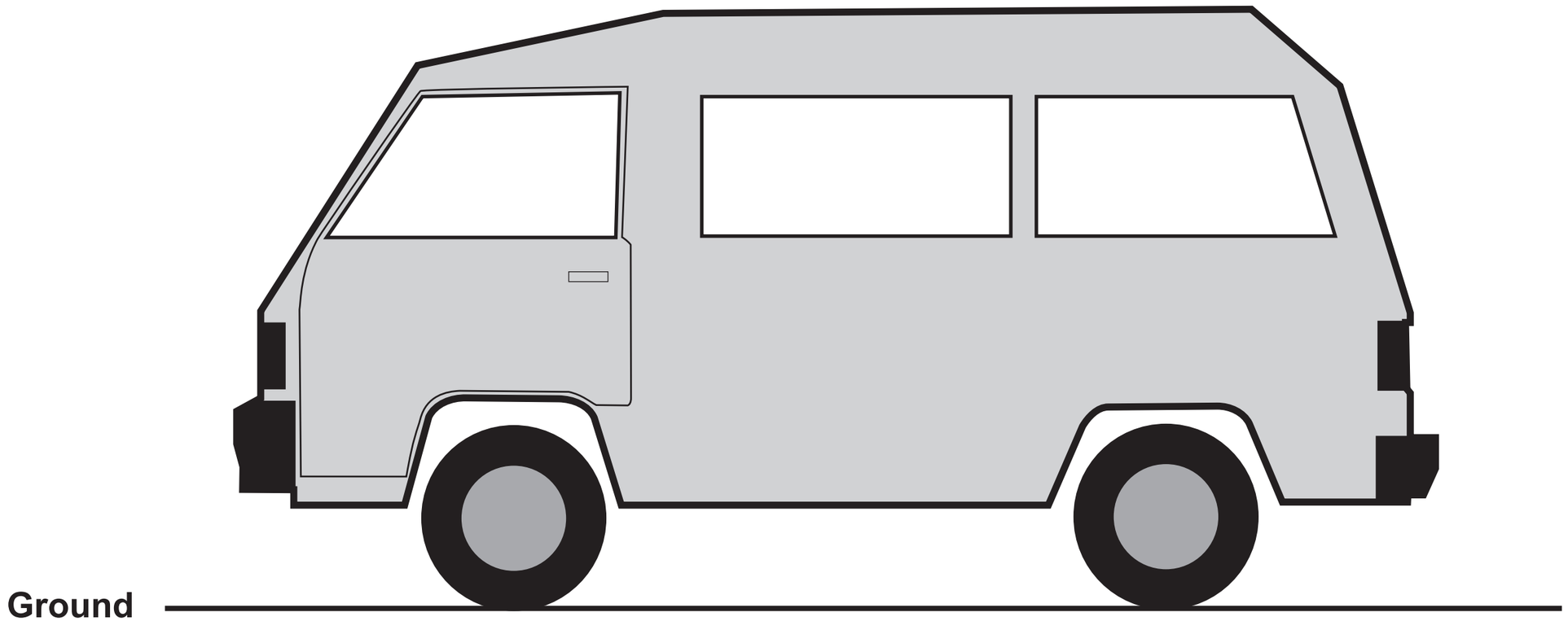
Question 4 (a) (i)

Gary’s timetable for servicing cars

Time	Monday	Tuesday	Wednesday	Thursday	Friday
09:00 – 10:00					
10:00 – 11:00					
11:00 – 12:00					
12:00 – 13:00					
13:00 – 14:00					
14:00 – 15:00					
15:00 – 16:00					
16:00 – 17:00					

Question 4 (d)

Scale: 1 cm represents 0•2 m



Question 5

Scoreboard

Competitor	1st jump	2nd jump	3rd jump	4th jump	5th jump	6th jump
Echevarria	8•25	8•14	8•34	8•30	7•91	X
Samaai	8•11	8•15	8•23	X	X	8•06
Henderson	8•28	8•18	8•39		8•13	8•17
Jianan	X	7•89	8•05	X	X	8•20
Cáceres	8•01	6•31	X	X	7•95	X
Hashioka	7•88	7•89	7•97	7•82	X	7•70
Gayle	8•46	X	X	8•69	–	–
Manyonga	8•16	8•05	8•18	8•10	8•14	8•28

Question 6

CASTELL CAR PARK

PARKING CHARGES

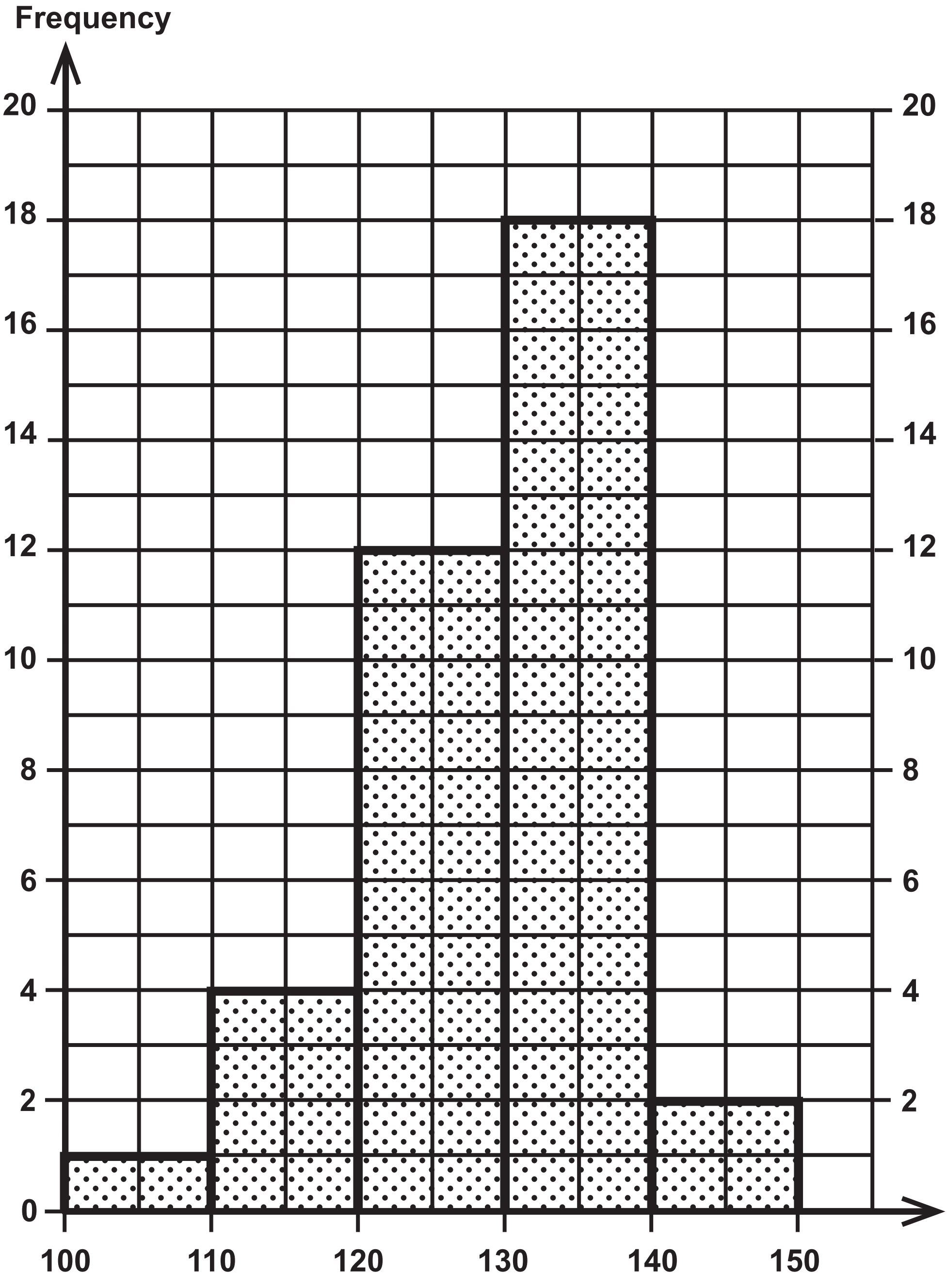
£3 for the first 2 HOURS, or part of the first 2 hours

AND after that

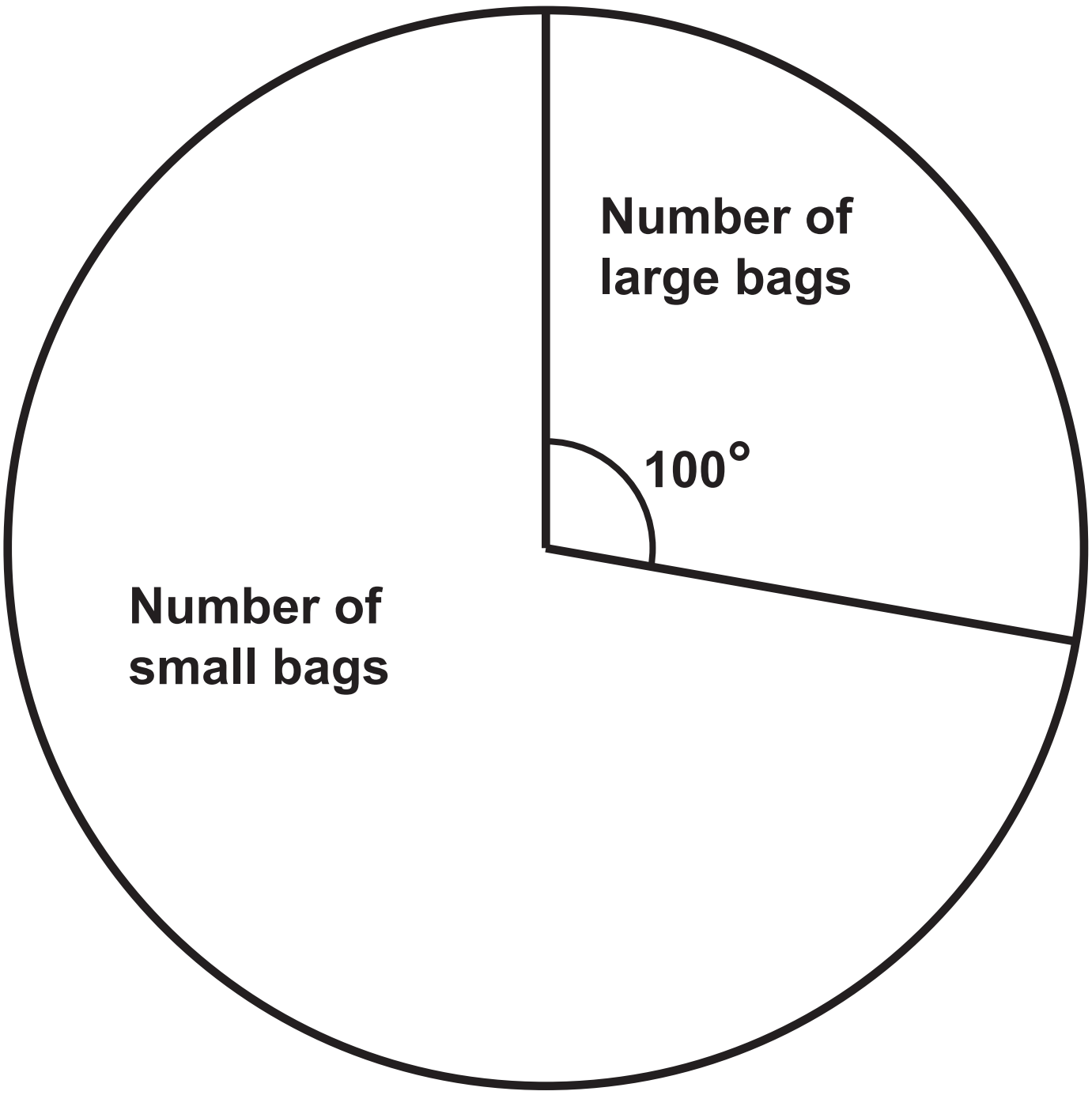
40p for every further 20 MINUTES, or part of each 20 minutes

Maximum stay is 24 hours

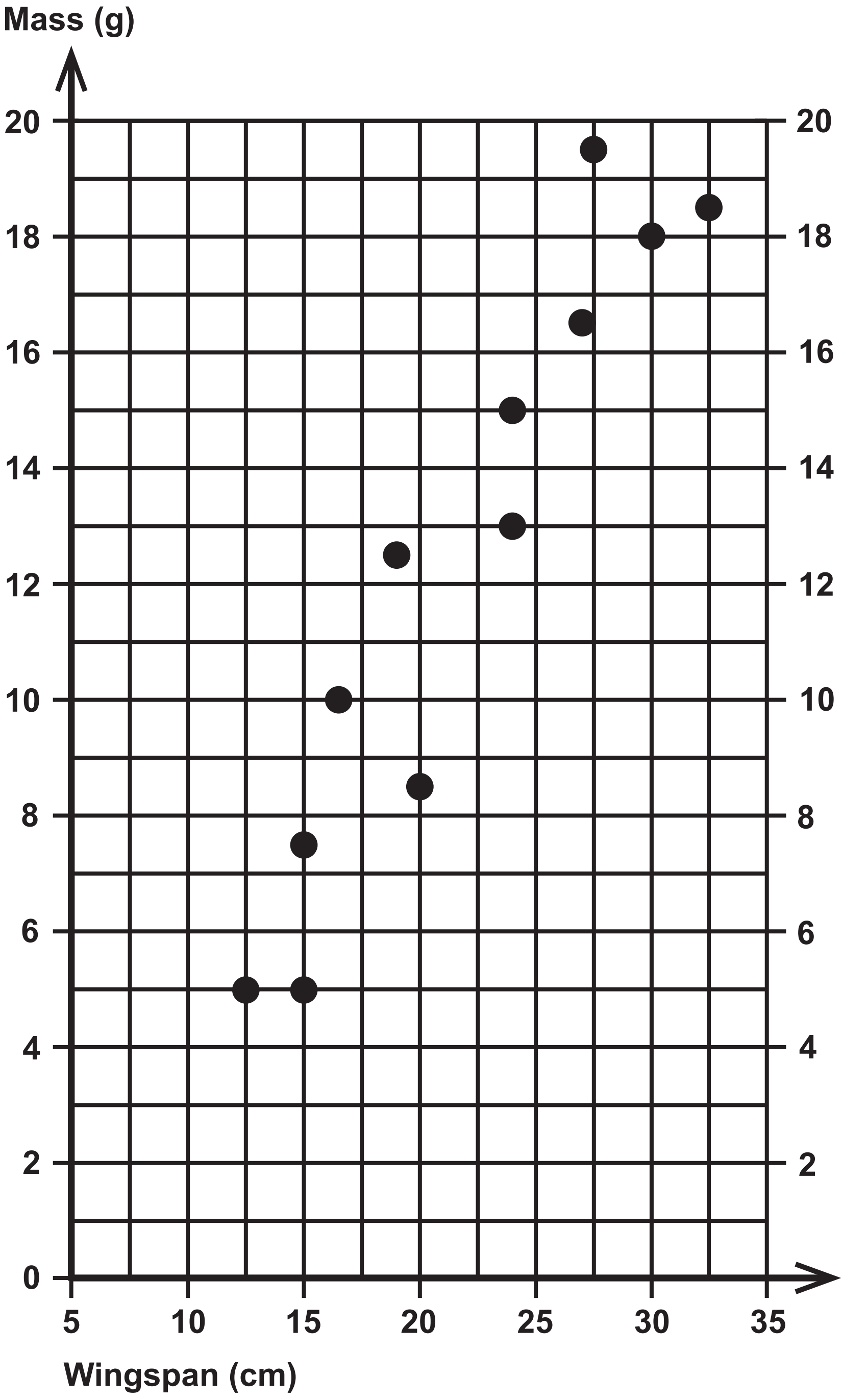
Question 7


Frequency
20
18
16
14
12
10
8
6
4
2
0
100
110
120
130
140
150
Energy (calories)

Question 8 (a)



Question 9



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FORMULA LIST
FOUNDATION TIER
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You must not write on these formula pages.

Anything you write on these formula pages will gain NO credit.

Formula List – Foundation Tier

Area of trapezium $= \frac{1}{2}(a + b)h$