



GCSE

3310U30-1

FRIDAY, 20 MAY 2022 – MORNING

MATHEMATICS – NUMERACY

UNIT 1: NON – CALCULATOR

INTERMEDIATE TIER

**1 hour 35 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.	4	
2.	5	
3.	3	
4.	6	
5.	8	
6.	3	
7.	8	
8.	6	
9.	5	
10.	2	
11.	6	
12.	4	
13.	10	
Total	70	

(Turn over)

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.

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

(Turn over)

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 3.14

(Turn over)

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, the assessment will take into account the quality of your linguistic and mathematical organisation, communication and accuracy in writing.

(Turn over)

1. Look at the information provided for Question 1 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
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(Turn over)

[1 mark]

1. (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.

(Turn over)

8

Maximum length of time is

_____ **hours** _____ **minutes**

[3 marks]

(Turn over)

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

During the first 10 days of April, the mean daily rainfall in Gwentre was 1.8 cm.

On 11th April, the rainfall in Gwentre was 4 cm.

continued on the next page . . .

(Turn over)

Question 2 continued

By finding the total rainfall for the first 10 days of April, calculate the mean daily rainfall for the first 11 days of April.

You must show all your working.

(Turn over)

3. Apples cost £3 per kg.

**Elsa buys some apples weighing
a total of 200 g.**

She pays with a £10 note.

Calculate how much change

Elsa should get.

You must show all your working.

13

[3 marks]

(Turn over)

- 4. Look at the diagram for Question 4 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.

continued on the next page . . .

(Turn over)

Question 4 continued

He uses groups of width 10 calories:

$$100 \leq \text{energy} < 110,$$

$$110 \leq \text{energy} < 120,$$

..... ,

$$140 \leq \text{energy} < 150,$$

4. (a) Which is the modal group?

[1 mark]

continued on the next page . . .

(Turn over)

Question 4 continued

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

[3 marks]

continued on the next page . . .

(Turn over)

Question 4 continued

4. (c) Consider ONLY the energy bars providing 130 calories or more. What percentage of these energy bars provide 140 calories or more?

[2 marks]

(Turn over)

- 5. 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 5 (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.

continued on the next page . . .

(Turn over)

Question 5 (a) continued

A total of 720 bags of frozen peas were sold last month.

Calculate the total cost of the sales of the frozen peas.

(Turn over)

[2 marks]

(Turn over)

6. Look at the diagram for Question 6 in the separate Diagram Booklet. The diagram is NOT drawn to scale. The diagram shows a plan.

Waintram Housing has a plan for building some new houses.

The plan shows the layout of the drains for some of the houses.

Some of the angles still need to be found.

Find the size of each of the angles w , x and y .

(Turn over)

7. Look at the diagram for Question 7 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 . . .

(Turn over)

Question 7 continued

7. (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 . . .

(Turn over)

Question 7 continued

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

Find the wingspan of the bird with a mass of 8.5 g .

Give your answer in INCHES.

(Turn over)

Wingspan is _____ INCHES

[3 marks]

continued on the next page . . .

(Turn over)

Question 7 continued

7. (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]

(Turn over)

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

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

(a) 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.

(Turn over)

Question 8 continued

- 8. (b) On Tuesday, the ratio of the number of people travelling by bus to the number of people travelling by train was 20 : 17**
- Calculate the number of people who travelled by train from the station on Tuesday.**

(Turn over)

- 9. (a) Gwyn is making some packs.
Each pack contains one nut,
one bolt and one washer.**

**To make up these packs,
Gwyn buys:**

- some boxes that contain
30 nuts each**
- some boxes that contain
5 bolts each**
- some boxes that contain
25 washers each.**

continued on the next page . . .

(Turn over)

Question 9 (a) continued

Gwyn wants to buy the LEAST POSSIBLE NUMBER OF BOXES so that, in making up the packs, he uses ALL of the nuts, bolts and washers he has bought.

Complete the table provided for Question 9 (a) in the separate Diagram Booklet to show the number of boxes of each item that Gwyn needs to buy. You must show all your working.

(Turn over)

Question 9 continued

9. (b) Each washer has a thickness of 2 mm, correct to the nearest 0.5 mm.

Calculate the greatest possible thickness of a stack of 6 washers.

(Turn over)

[2 marks]

(Turn over)

**10. The surface area of the Earth is
510 million km²**

Write this area in standard form.

_____ km²

[2 marks]

(Turn over)

11. OrenVit is a company that produces bottles of orange juice.

The company uses only bottles with a capacity of one litre.

Each day, the cost of producing bottles of orange juice is as follows:

Fixed charge for use of equipment	£10
Cost of ingredients	80p per bottle
Cost of empty bottles with labels	20p per bottle

continued on the next page . . .

(Turn over)

Question 11 continued

11. (a) Look at the diagram for Question 11 (a) in the separate Diagram Booklet.

On the graph paper, draw a graph to show the total daily cost of producing between 0 and 100 bottles of orange juice.

[3 marks]

continued on the next page . . .

(Turn over)

Question 11 continued

**11. (b) One day, OrenVit produces
1750 PINTS of orange juice
in one – litre bottles.**

**Calculate the cost of producing
this quantity of orange juice.**

[3 marks]

(Turn over)

12. Rectangular stickers with warnings written on them are often placed near water taps.

Look at Diagram 1 and Diagram 2 for Question 12 in the separate Diagram Booklet. The diagrams are NOT drawn to scale.

The rectangular sticker shown in Diagram 1 warns of hot water.

It has a length of 14 cm and an area of 42 cm^2

continued on the next page . . .

(Turn over)

Question 12 continued

Diagram 2 is mathematically similar to the first sticker.

It is an enlargement of the first sticker, with scale factor 4

Calculate the length and the width of the larger sticker (Diagram 2).

You must show all your working.

(Turn over)

46

[4 marks]

(Turn over)

13. (a) Look at the diagram for Question 13 (a) in the separate Diagram Booklet. The diagram is a cumulative frequency graph.

An aquarium has 35 ray fish.

The cumulative frequency graph shows information about the lengths of these ray fish.

Use the cumulative frequency diagram to give the best estimates for the answers to the following questions.

continued on the next page . . .

(Turn over)

Question 13 (a) continued

**13. (a) (i) What is the median length
of these ray fish?**

_____ **cm**

[1 mark]

continued on the next page . . .

(Turn over)

Question 13 (a) continued

**13. (a) (ii) How many of these ray fish
have lengths greater than
72 cm?**

[1 mark]

continued on the next page . . .

(Turn over)

Question 13 continued

- 13. (b) The aquarium also has guppies. The table below shows information about the length of the guppies in a sample of 60 guppies.**

Minimum	1.5 cm
Range	5.0 cm
Median	3.0 cm
Lower quartile	2.5 cm
Interquartile range	3.5 cm

continued on the next page . . .

(Turn over)

Question 13 (b) continued

13. (b) (i) On the grid provided for Question 13 (b) (i) in the separate Diagram Booklet, draw a box – and – whisker plot of the data from the table on the previous page.

[4 marks]

continued on the next page . . .

(Turn over)

Question 13 (b) continued

**13. (b) (ii) How many of the sample
of 60 guppies have a length
greater than or equal to
2.5 cm?**

[2 marks]

continued on the next page . . .

(Turn over)

Question 13 continued

**13. (c) A carp was weighed in
November 2021.**

**It was weighed again in
April 2022.**

**The carp had a mass of 9.9 kg
in April 2022.**

**Between these dates, the mass
of the carp increased by 10%**

**Calculate the mass of the carp
in November 2021.**

(Turn over)

[2 marks]

END OF PAPER

TOTAL 70 MARKS

(Turn over)



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**The Diagram Booklet MUST
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and sent for marking.**

Diagram Booklet

Surname: _____

First name(s): _____

Centre Number: _____

Candidate Number: 0 _____

Question 1

CASTELL CAR PARK

PARKING CHARGES

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

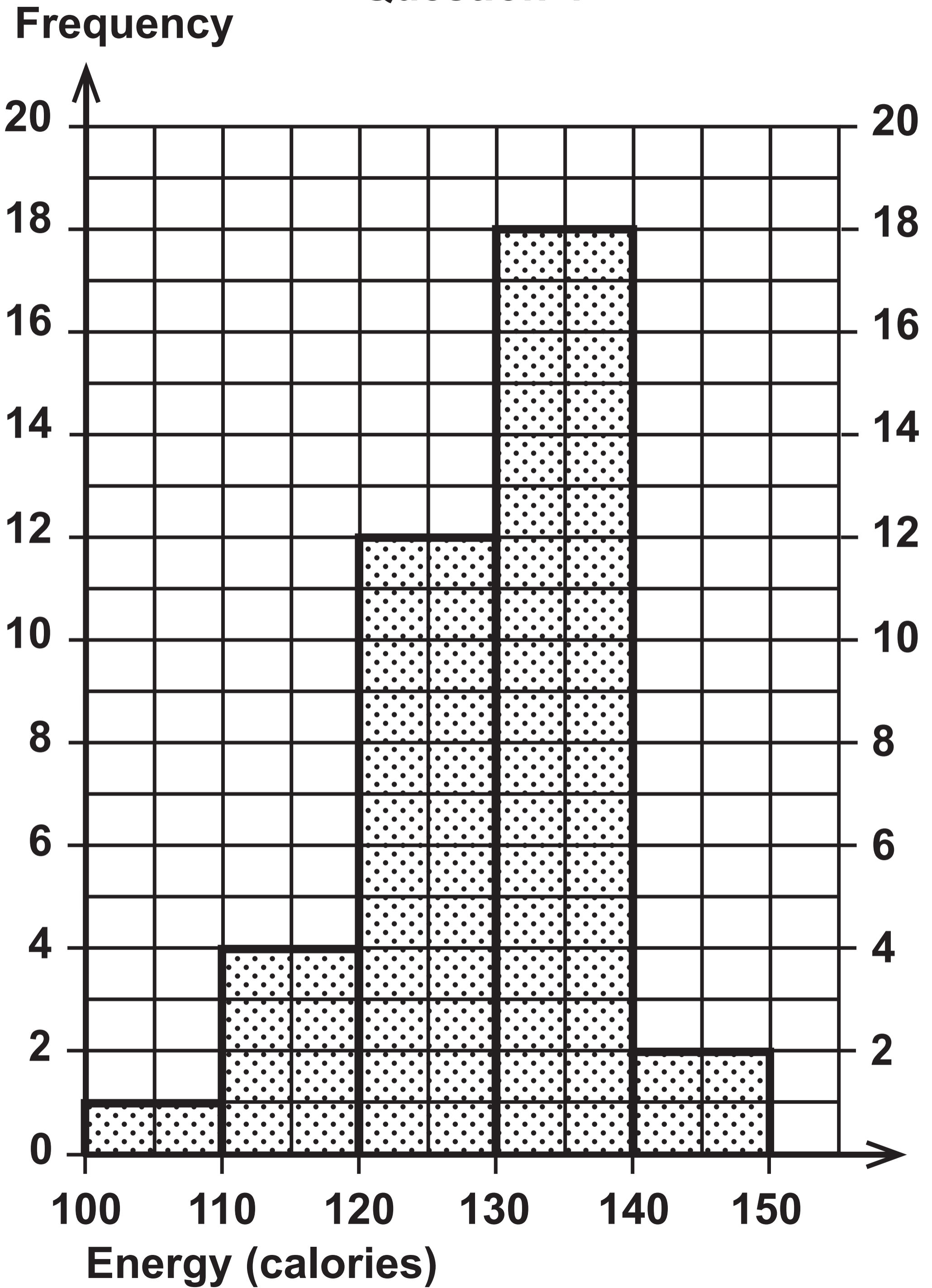
AND after that

40p for every further 20 MINUTES, or part of

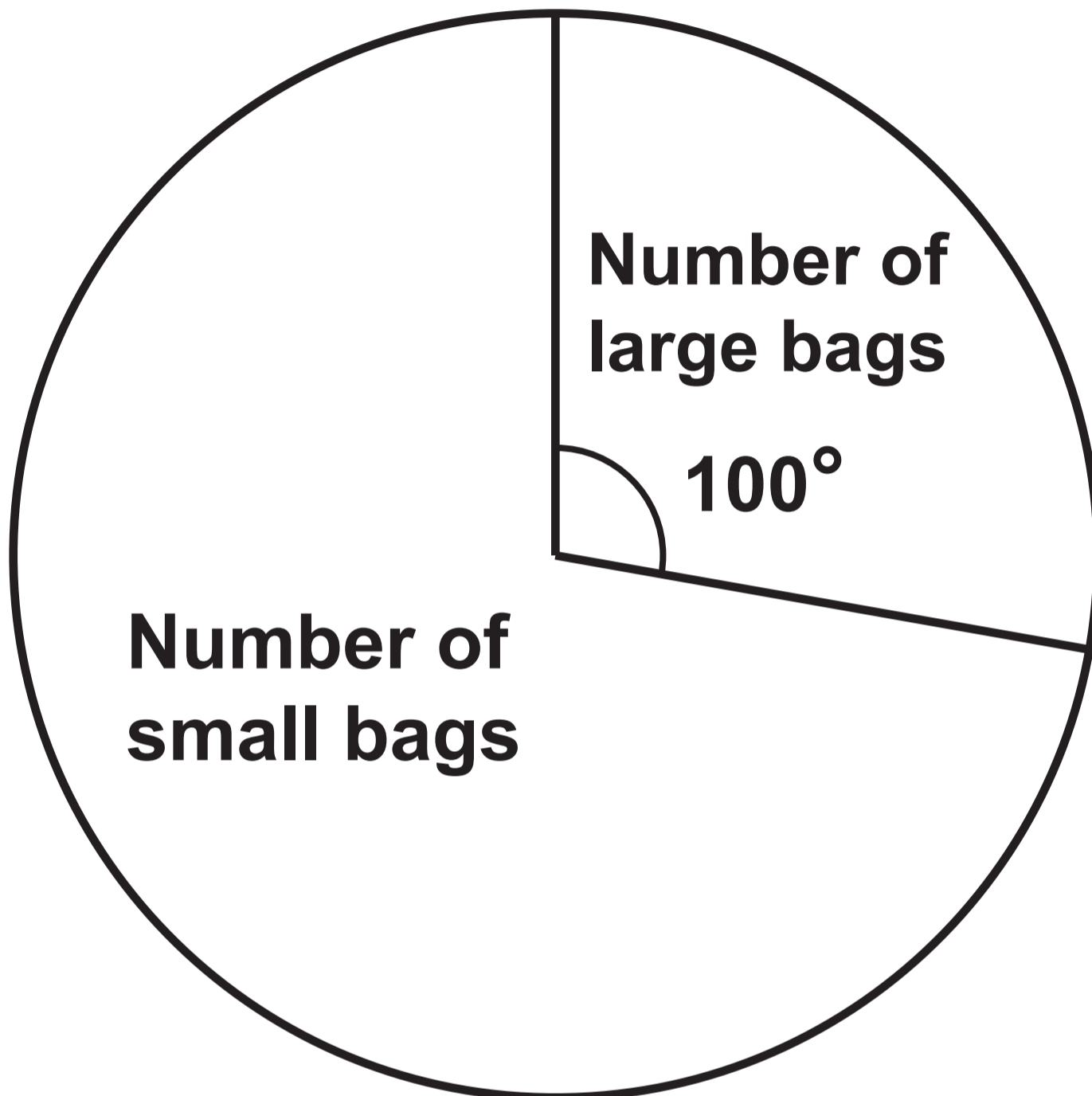
each 20 minutes

Maximum stay is 24 hours

Question 4

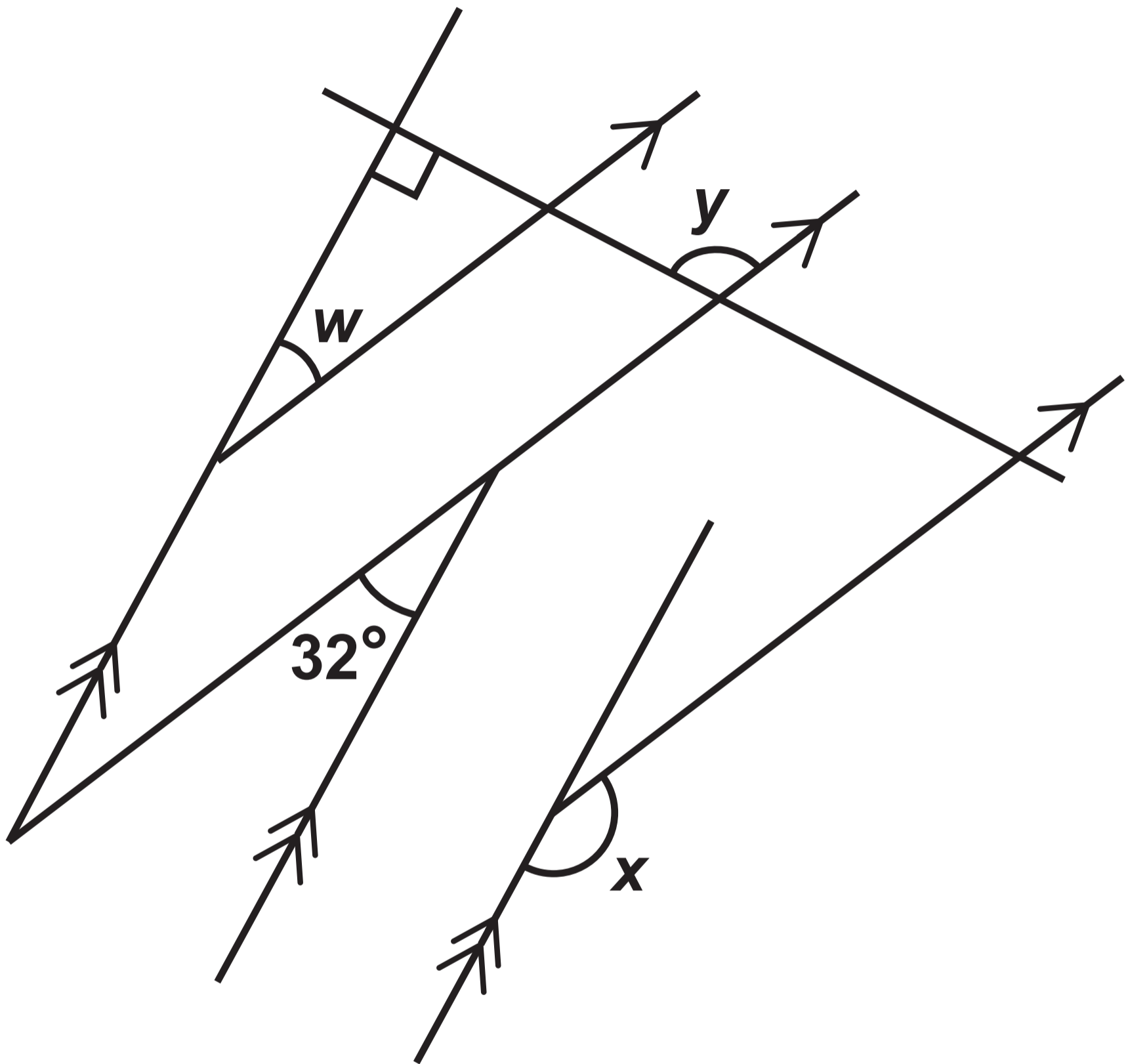


Question 5 (a)



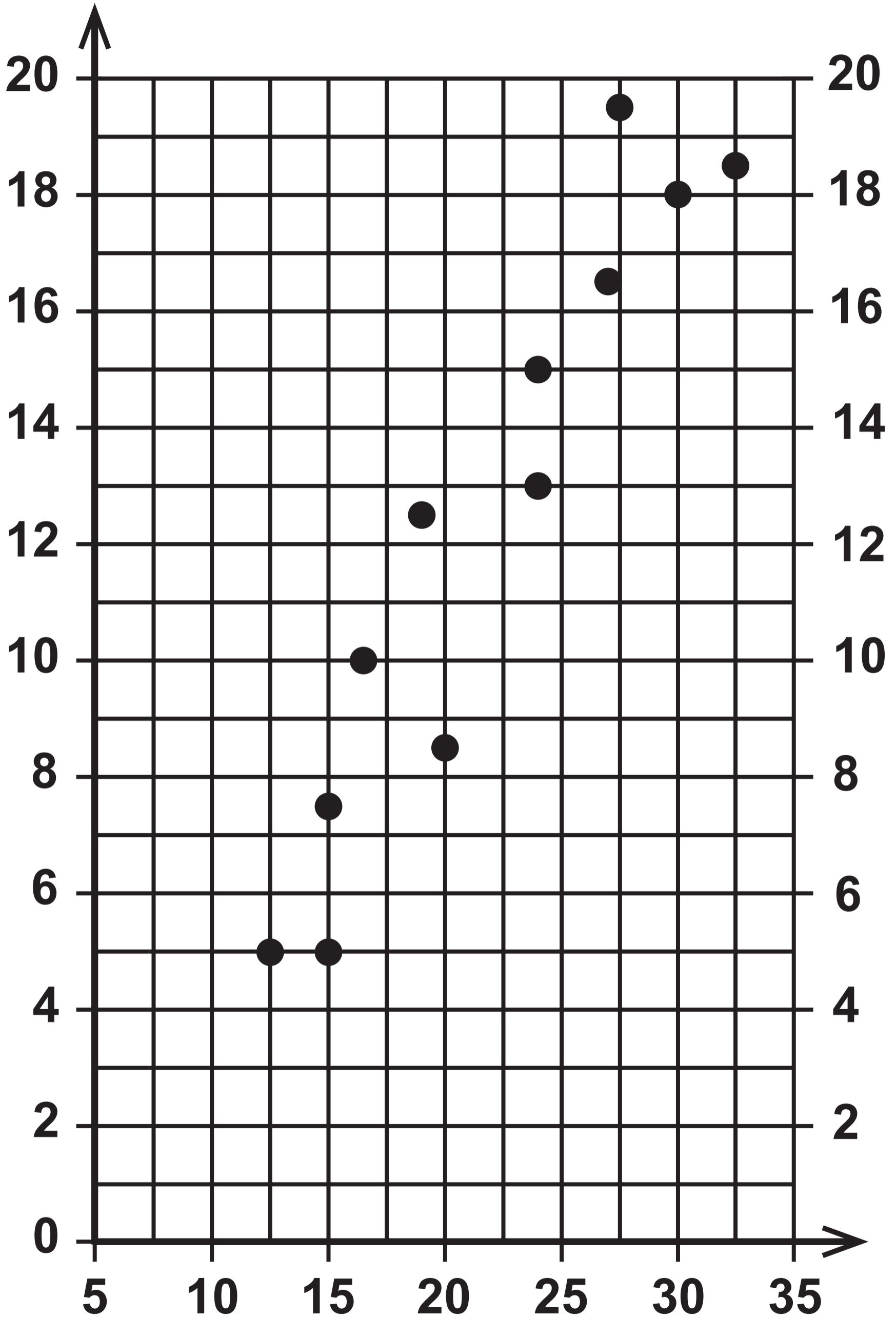
Question 6

Diagram NOT drawn to scale



Question 7

Mass (g)



Wingspan (cm)

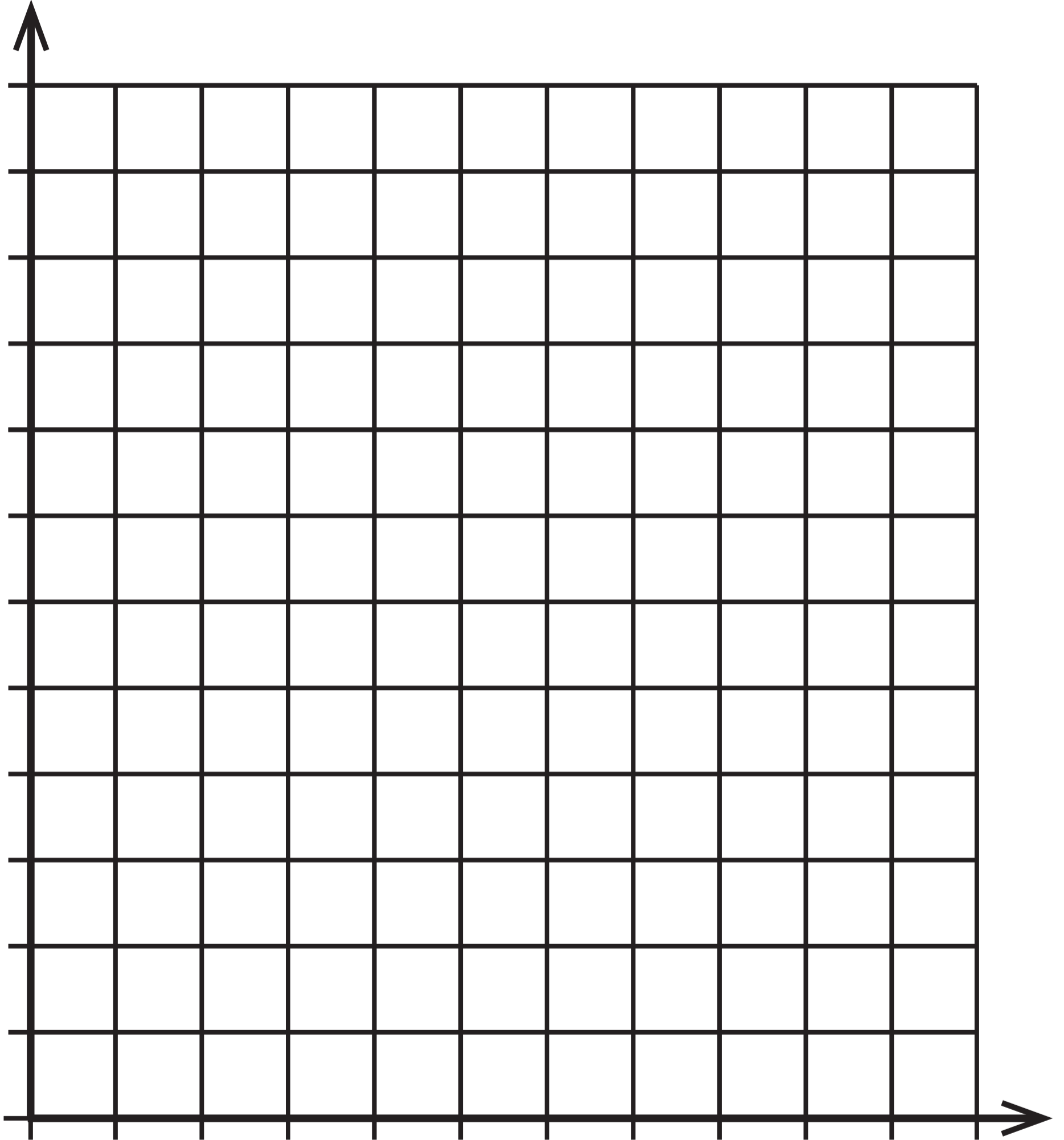
Question 9 (a)

Table

	Number of boxes needed
Nuts (30 in each box)	_____ boxes
Bolts (5 in each box)	_____ boxes
Washers (25 in each box)	_____ boxes

Question 11 (a)

Cost (£)



Number of 1 - litre bottles

Question 12

Diagram 1

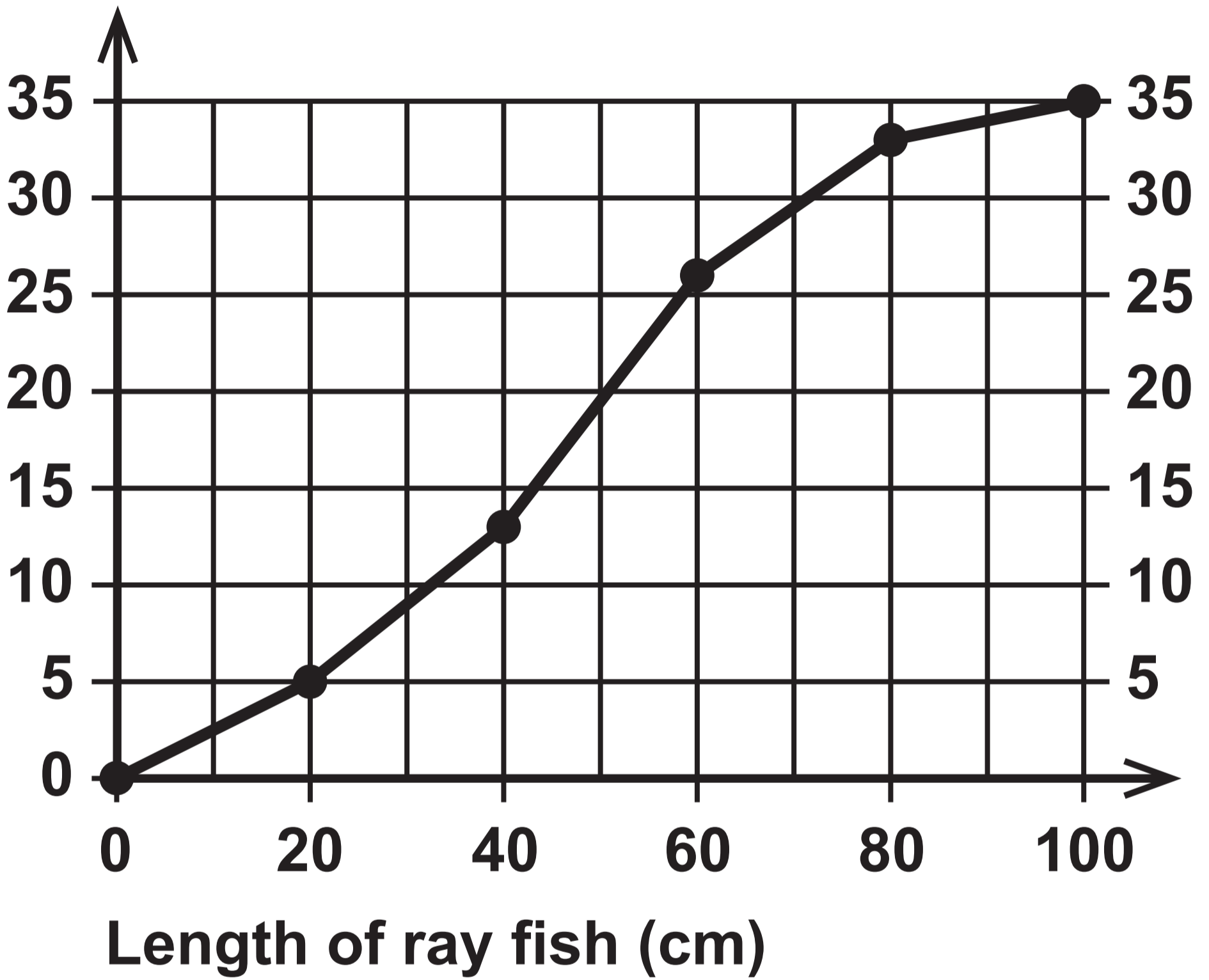
This water is hot

Diagram 2

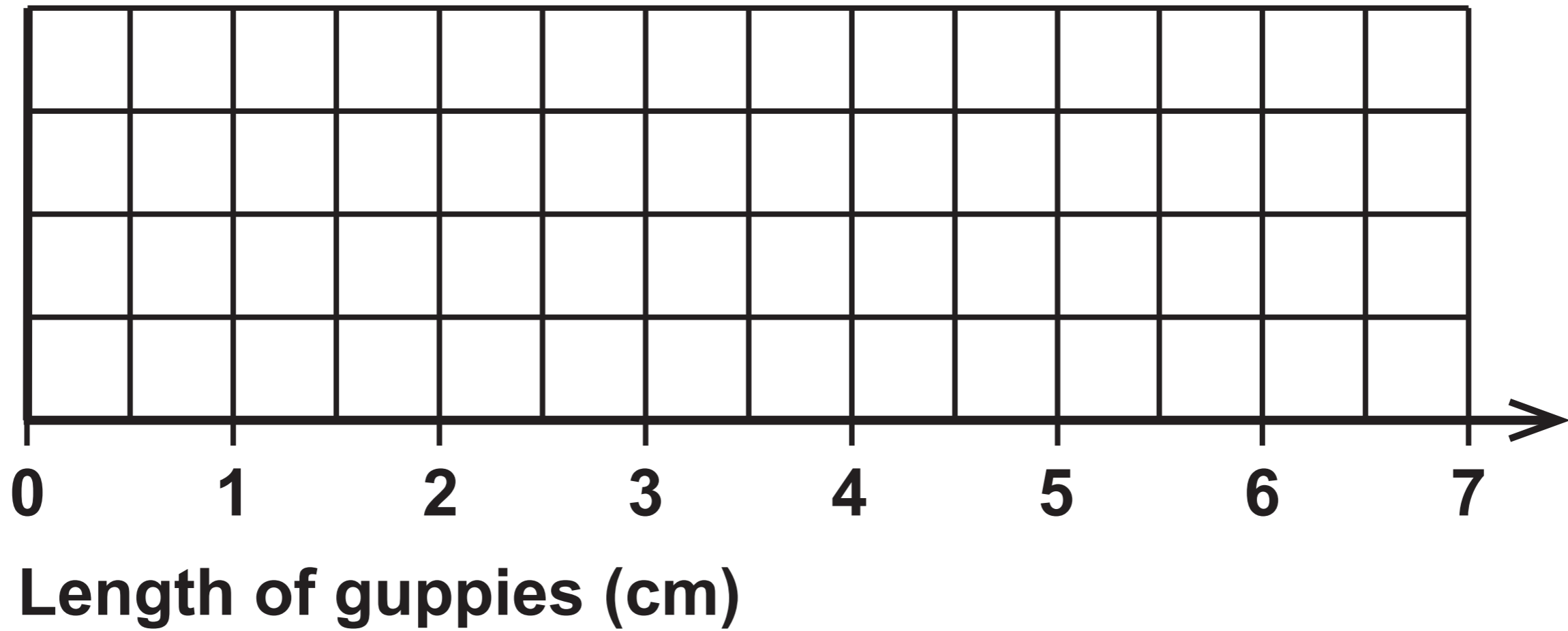
This water is hot

Question 13 (a)

Cumulative frequency



Question 13 (b) (i)



**GCSE
MATHEMATICS
and
NUMERACY**



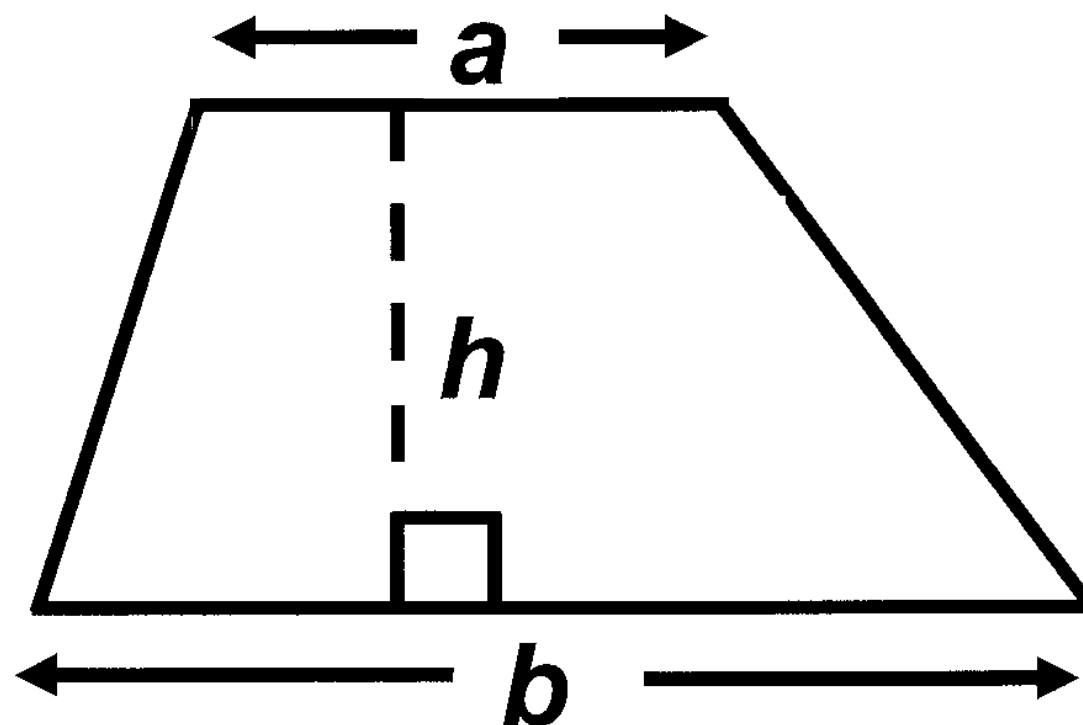
**FORMULA LIST
INTERMEDIATE TIER
GCSE**

You must not write on these formula pages.

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

Formula List – Intermediate Tier

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



Volume of prism =
area of cross – section \times length

