



GCSE

3310U30–1

TUESDAY, 5 NOVEMBER 2024 – MORNING

MATHEMATICS – NUMERACY

UNIT 1: NON – CALCULATOR

INTERMEDIATE TIER

**1 hour 45 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.	8	
2.	10	
3.	15	
4.	4	
5.	3	
6.	5	
7.	2	
8.	6	
9.	5	
10.	8	
11.	6	
12.	8	
Total	80	

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.

A model for Question 9 and Question 12.

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, taking care to number the question(s) correctly.

Take π as $3 \cdot 14$

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

(Turn over)

1. (a) Look at the diagram for Question 1 (a) in the separate Diagram Booklet. The diagram is a map. The map shows part of the coastline and some islands off the coast of Gwynedd.
- (i) Write down the bearing of Aberdaron from Bardsey Island lighthouse.

o

[1 mark]

continued on the next page . . .

(Turn over)

Question 1 (a) continued

1. (a) (ii) Write down the bearing of Bardsey Island lighthouse from Ynys Gwylan – bach.

[1 mark]

continued on the next page . . .

(Turn over)

Question 1 (a) continued

- 1. (a) (iii) Huw can see Bardsey Island lighthouse from Ynys Gwylan – bach. The distance between Bardsey Island lighthouse and Ynys Gwylan – bach is 5 miles. How far is the lighthouse from Ynys Gwylan – bach in KILOMETRES? You must show all your working.**
-
-
-
-
-
-

(Turn over)

[2 marks]

continued on the next page . . .

(Turn over)

Question 1 continued

1. (b) The candela and the lumen are units that can be used to measure light intensity.

Look at the diagram for Question 1 (b) in the separate Diagram Booklet. The diagram is a conversion graph.

You can use the graph to make approximate conversions between candelas and lumens for a particular type of light.

For this type of light, complete each of the following statements.

- (i) 1.15 candelas is approximately equal to _____ lumens.
[1 mark]

continued on the next page . . .

(Turn over)

Question 1 (b) continued

1. (b) (ii) **13.5 lumens is approximately equal to _____ candelas.**
[1 mark]

continued on the next page . . .

(Turn over)

Question 1 continued

- 1. (c) The light from Bardsey Island lighthouse has an intensity of approximately 52 000 candelas. The light from Strumble Head lighthouse in Pembrokeshire has an intensity of approximately 1 000 000 candelas.**

BY ESTIMATING, complete the following statement.

You must show all your working.

‘The light from Strumble Head lighthouse is approximately _____ times as intense as the light from Bardsey Island lighthouse.’

continued the next page . . .

(Turn over)

Question 1 (c) continued

[2 marks]

(Turn over)

[3 marks]

continued on the next page . . .

(Turn over)

Question 2 continued

2. (b) Maria makes a salad dressing from oil and vinegar.

She uses oil and vinegar in the ratio 3 : 1

Maria makes 280 ml of salad dressing.

Calculate the quantity of oil and the quantity of vinegar in the salad dressing.

Oil _____ ml

Vinegar _____ ml

[3 marks]

continued on the next page . . .

(Turn over)

Question 2 continued

- 2. (c) It costs Maria £24 to make 40 portions of salad. She sells all these portions of salad for 90p each.**

Calculate the PERCENTAGE profit that Maria makes.

(Turn over)

[4 marks]

(Turn over)

3. (a) Charlton Garden Centre sells plant pots and saucers.

Plant pot 40p	Plant pot saucer 25p
--------------------------------	---------------------------------------

At the garden centre, Enid buys twice as many plant pots as she does saucers.

The cost of a plant pot is 40p.

The cost of a saucer is 25p.

She spends £10.50 buying these plant pots and saucers.

Calculate how much Enid spends on buying the SAUCERS.

You must show all your working.

(Turn over)

**Enid spends £ _____ buying
the SAUCERS.**

[3 marks]

continued on the next page . . .

(Turn over)

Question 3 continued

- 3. (b) Look at the information for Question 3 (b) in the separate Diagram Booklet.**

Charlton Garden Centre sells packets of wild flower seeds.

Which of the three different packets of seeds is the best value for money?

Bee Flower Mix

Cornfield Flower Mix

Butterfly Flower Mix

You must show all your working.

(Turn over)

Question 3 continued

- 3. (c) (i) IN THIS PART OF THE QUESTION, YOU WILL BE ASSESSED ON THE QUALITY OF YOUR ORGANISATION, COMMUNICATION AND ACCUARACY IN WRITING.**

Look at the diagram for Question 3 (c) (i) in the separate Diagram Booklet. The diagram is NOT drawn to scale.

continued on the next page . . .

(Turn over)

Question 3 (c) (i) continued

**Gareth buys packets of
Cosmos flower seeds to sow
in a part of his garden.
The diagram shows this part
of his garden labelled *ABCD*.**

In the diagram:

$$**AB = 3.5 \text{ metres}**$$

$$**AD = 1.6 \text{ metres}**$$

$$**DC = 4.5 \text{ metres}**$$

***AB* is parallel to *DC*.**

Angle *ADC* is a right angle.

**A 2.5 g packet of Cosmos
seeds costs £8.20**

**Gareth needs 1 gram of
Cosmos seeds to sow an area
of 1 m²**

continued on the next page . . .

(Turn over)

Question 3 (c) continued

3. (c) (ii) There are 105 Cosmos seeds in each gram.

How many seeds are there in 10 kg?

Circle your answer.

1050
10 500
105 000
1 050 000
10 500 000

[1 mark]

(Turn over)

4. Look at the diagrams for Question 4 in the separate Diagram Booklet.

The diagrams show two frequency diagrams.

Miss Hughes asked her class of Year 9 pupils and her class of Year 10 pupils how many minutes they each spent on their mathematics homework last weekend.

The frequency diagrams in the Diagram Booklet show the results.

The groups used are as follows:

$0 \leq \text{time} < 10$
$10 \leq \text{time} < 20$
$20 \leq \text{time} < 30$
$30 \leq \text{time} < 40$

continued on the next page . . .

(Turn over)

Question 4 continued

4. (a) What is the modal group of the times for the Year 9 pupils?

[1 mark]

continued on the next page . . .

(Turn over)

Question 4 continued

- 4. (b) How many of the Year 10 pupils spent 20 minutes or more on their mathematics homework last weekend?**

[1 mark]

continued on the next page . . .

(Turn over)

Question 4 continued

4. (c) Did any of the Year 10 pupils spend NO time on their mathematics homework last weekend?

Yes

No

Can't tell

You must give a reason for your answer.

[1 mark]

continued on the next page . . .

(Turn over)

Question 4 continued

- 4. (d) Delyth calculates the following:**
- the fraction of the Year 9 pupils who spent between 30 and 40 minutes on their homework**
 - the fraction of the Year 10 pupils who spent between 30 and 40 minutes on their homework.**

Delyth says,

“These fractions are exactly the same.”

continued on the next page . . .

(Turn over)

Question 4 continued

Is Delyth correct?

Yes

No

You must give a reason for your answer.

[1 mark]

(Turn over)

5. Dilwyn asked 20 people how many pets each of them owned.

The results are shown in the table below.

Number of pets	Number of people
0	8
1	4
2	6
3	2

Calculate the mean number of pets owned by these 20 people.

You must show all your working.

(Turn over)

[3 marks]

(Turn over)

6. Gerallt is planning to go to the Maldives.

His local exchange shop:

- **sells 20 MALDIVIAN RUFIIYAA (MVR) for £1**
- **takes all possible British notes and coins**
- **sells MVR notes, but only has 500 MVR and 1000 MVR notes available.**

Gerallt has £360 to buy Maldivian rufiyaa (MVR).

Calculate:

- **the maximum number of Maldivian rufiyaa (MVR) that Gerallt can buy**
- **how much this will cost him.**

continued on the next page . . .

(Turn over)

**Maximum number of Maldivian rufiyaa
(MVR) is _____**

The cost is £ _____

[5 marks]

(Turn over)

7. Eleri is investigating whether people working in offices are happy with the processing speed of their office computer.

She considers the data she needs to collect.

Eleri includes the following two questions in her questionnaire.

For each question, write down one set of possible groups she could use as answer options.

Question 1: “How many days per month do you work in your office?”

Possible groups for answer:

Question 2: “How happy are you with the processing speed of your office computer?”

Possible groups for answer:

[2 marks]

(Turn over)

8. Look at the table for Question 8 in the separate Diagram Booklet. The table shows information about income tax rates.

Jamal is paid in dollars.

The income tax rates are shown in the table.

Jamal's total earnings before tax are 36 000 dollars.

Calculate how much tax Jamal is due to pay in total.

You must show all your working.

[6 marks]

(Turn over)

**9. Ask for the model for Question 9.
The model is NOT to scale. The model represents a fire surround that is made from concrete.**

The fire surround has a uniform cross – section.

The edges of the fire surround are all either horizontal or vertical, as shown in the model.

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

The diagram is NOT drawn to scale. The diagram shows the uniform cross – section of the fire surround.

continued on the next page . . .

(Turn over)

Question 9 continued

In the diagram:

$$**AB = 160 \text{ cm}**$$

$$**BC = AH = 100 \text{ cm}**$$

$$**CD = HG = 15 \text{ cm}**$$

$$**FG = ED = 60 \text{ cm}**$$

The volume of the concrete in the fire surround is $164\,000 \text{ cm}^3$

Calculate the depth of the fire surround.

Give your answer in centimetres.

You must show all your working.

(Turn over)

Depth of fire surround

is _____ **cm**

[5 marks]

(Turn over)

10. (a) Delia invests £4000 in an account that pays 3% compound interest per annum.

She does not withdraw money or make any other payments into her account.

How much will Delia have in her account after TWO YEARS?

(Turn over)

AMOUNT in Delia's account after two years £ _____

[3 marks]

continued on the next page . . .

(Turn over)

Question 10 continued

10. (b) Delia bought a gold bracelet at a car boot sale a few years ago.

(i) Delia's bracelet has increased in value by 40%

Her gold bracelet is now worth £42

Calculate how much Delia paid for the bracelet in the car boot sale.

(Turn over)

Delia paid £ _____

[2 marks]

continued on the next page . . .

(Turn over)

Question 10 (b) continued

**10. (b) (ii) The density of the gold in Delia's bracelet is 20 g/cm^3
The bracelet has a mass of 6×10^{-3} KILOGRAMS.**

Calculate the volume of Delia's bracelet.

Give your answer in cm^3

[3 marks]

(Turn over)

11. Look at the diagrams for Question 11 in the separate Diagram Booklet.

The diagrams show three box–and–whisker diagrams.

Geraint has collected data on some adult gulls.

**He weighed 400 slender–billed gulls,
400 little gulls,
and 400 black–headed gulls.**

He has constructed three box–and–whisker diagrams to display the masses of the gulls.

Diagram 1 – Slender–billed gulls,

Diagram 2 – Little gulls and

Diagram 3 – Black–headed gulls.

continued on the next page . . .

(Turn over)

Question 11 continued

11. (a) What is the range of the masses of the slender–billed gulls?

Range of the masses _____ g

[1 mark]

continued on the next page . . .

(Turn over)

Question 11 continued

11. (b) How many of the little gulls have a mass greater than or equal to 95 g?

[2 marks]

continued on the next page . . .

(Turn over)

Question 11 continued

11. (c) Write down the percentage of little gulls that have a mass greater than or equal to 170 g.

_____ %

[1 mark]

continued on the next page . . .

(Turn over)

Question 11 continued

11. (d) From the box–and–whisker diagrams, Geraint notices that two of the types of gull have the same median mass.

He makes the following statement about these two types of gull.

“The diagrams suggest that one of these two types of gull generally has a greater mass than the other.”

(i) Which type of gull appears to have the greater mass?

[1 mark]

continued on the next page . . .

(Turn over)

Question 11 (d) continued

11. (d) (ii) Geraint based his statement on ONE of the following measures.

Which measure did Geraint use?

Circle your answer.

Range
Median
Lowest mass
Lower quartile
Upper quartile

[1 mark]

(Turn over)

12. Ask for the model for Question 12.

The model is NOT to scale. The model represents a shipping container.

Shipping containers are used to transport goods around the world.

The dimensions of a shipping container are as follows:

- The height is 2.59 m, correct to the nearest centimetre.**
- The width is 2.43 m, correct to the nearest centimetre.**
- The length is approximately double the width.**

continued on the next page . . .

(Turn over)

Question 12 continued

- 12. (a) What is the least possible WIDTH of this shipping container?
Circle your answer.**

2•425 m
2•42 m
2•435 m
2•426 m
2•424 m

[1 mark]

continued on the next page . . .

(Turn over)

Question 12 continued

12. (b) Look at the diagram for Question 12 (b) in the separate Diagram Booklet. The diagram is NOT drawn to scale. The diagram shows an end view of a stack of these shipping containers.

- (i) Calculate the greatest possible HEIGHT of the stack of shipping containers. Give your answer in metres.**

(Turn over)

[3 marks]

continued on the next page . . .

(Turn over)

Question 12 (b) continued

12. (b) (ii) There are 32 shipping containers in this stack. Sketch the plan view of this stack of shipping containers in the blank space provided for Question 12 (b) (ii) in the separate Diagram Booklet.

[1 mark]

continued on the next page . . .

(Turn over)

Question 12 continued

12. (c) In 2012, there were 2×10^7 shipping containers in the world.

Joshua says,

By 2025, I think that the number of shipping containers in the world will reach 1.2×10^8

Assuming Joshua is correct, complete the statement below.

“By 2025, the percentage increase in the number of shipping containers in the world since 2012 will be _____ %”

continued on the next page . . .

(Turn over)

[3 marks]

END OF PAPER
TOTAL 80 MARKS

(Turn over)



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**MATHEMATICS – NUMERACY
UNIT 1: NON – CALCULATOR
INTERMEDIATE TIER**

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

Diagram Booklet

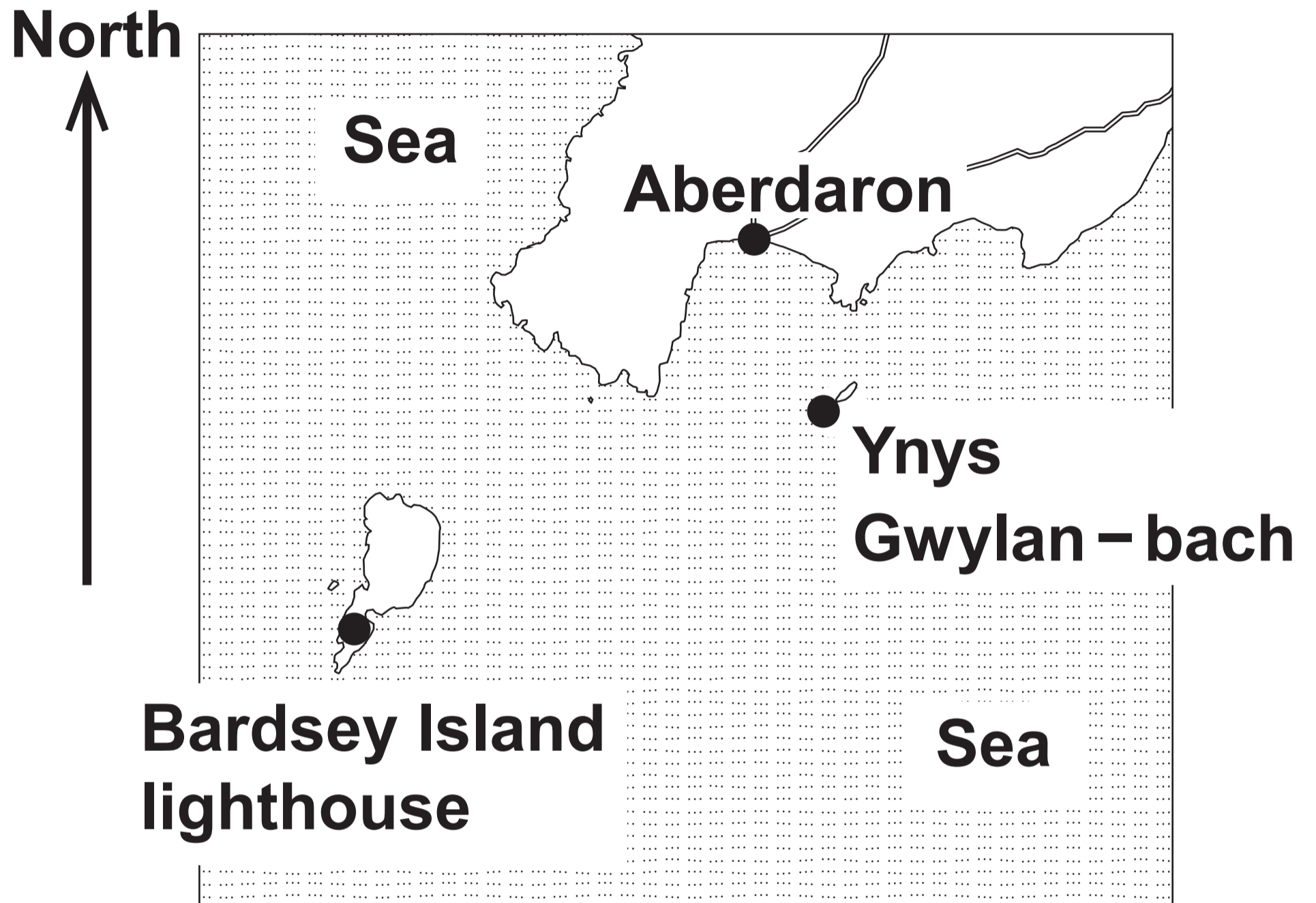
Surname: _____

First name(s): _____

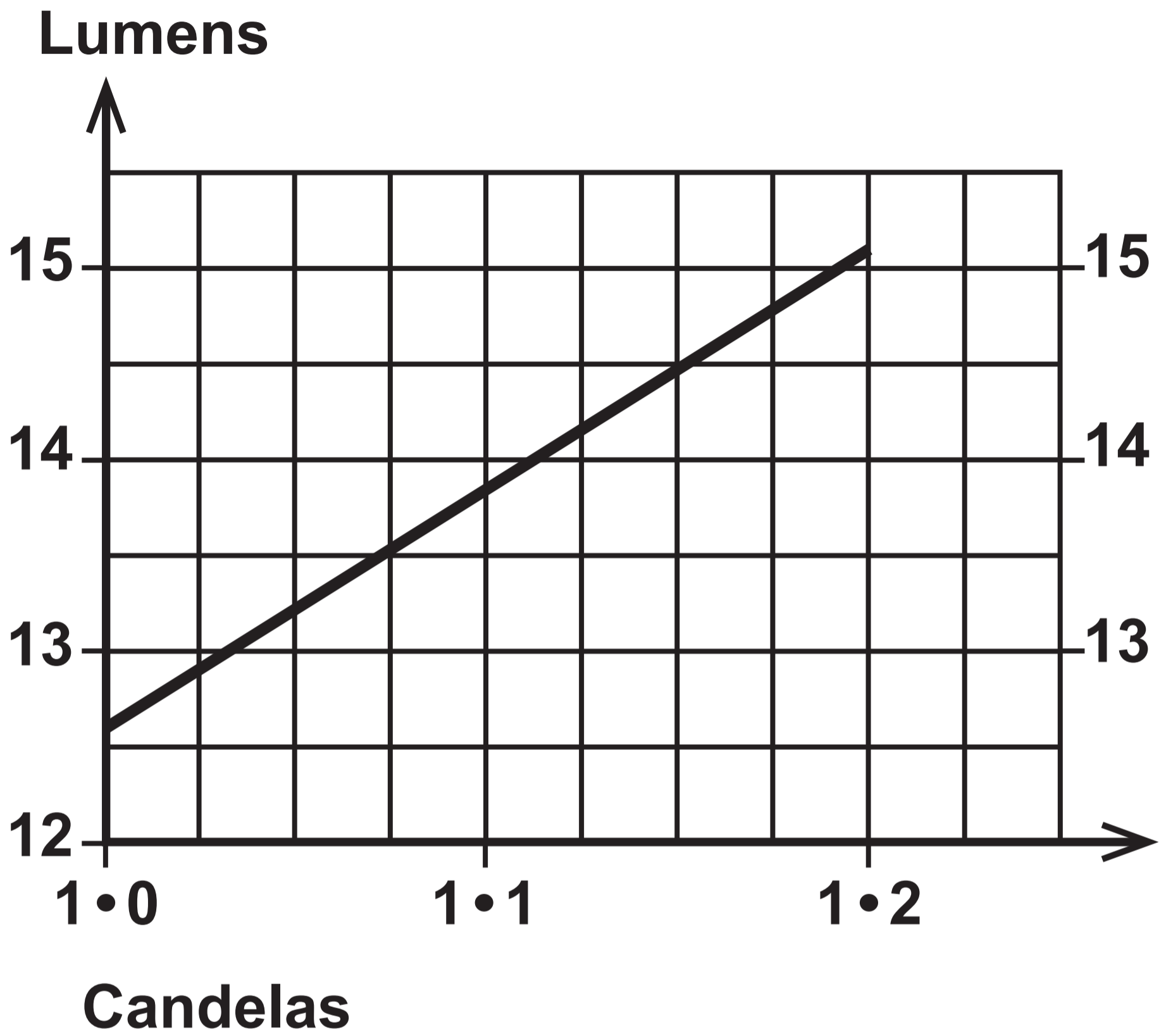
Centre Number: _____

Candidate Number: 0 _____

Question 1 (a)



Question 1 (b)

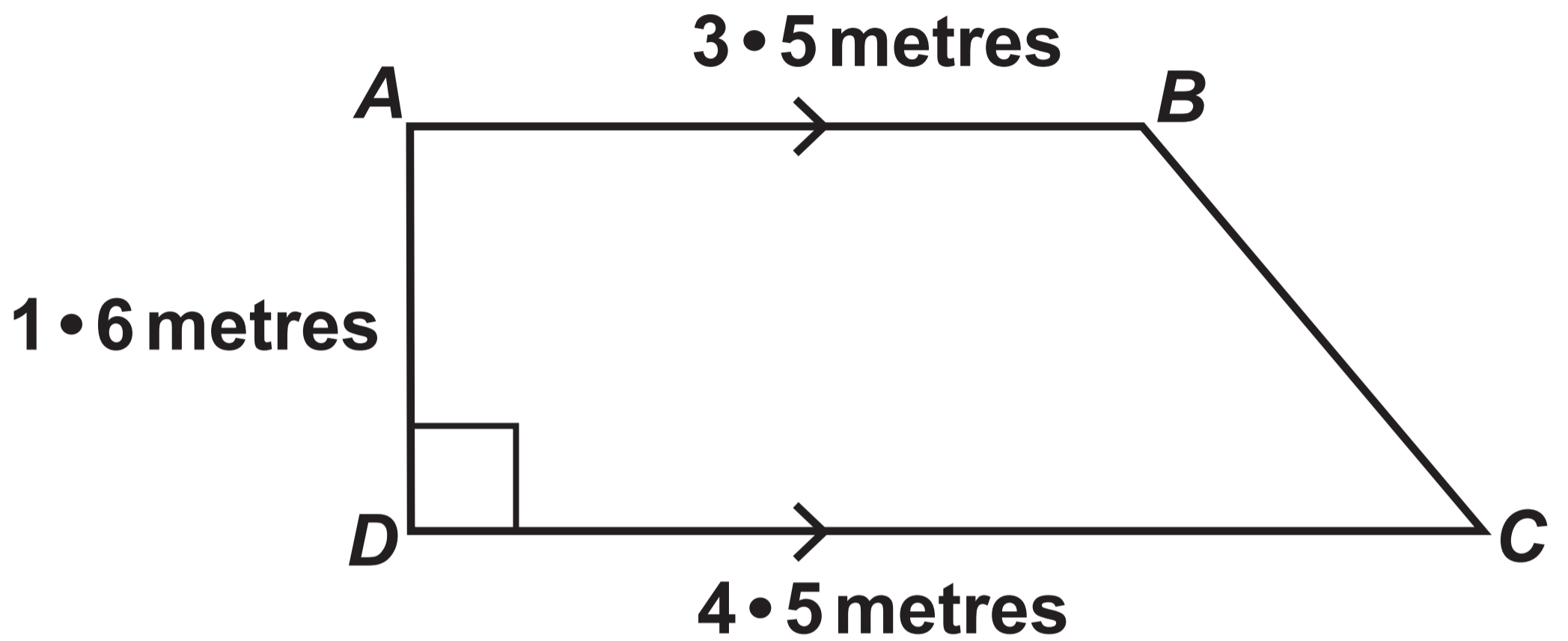


Question 3 (b)

Bee Flower Mix 1 g packet of seeds £2.49	Cornfield Flower Mix 5 g packet of seeds £15	Butterfly Flower Mix 3 g packet of seeds £7.20
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Question 3 (c) (i)

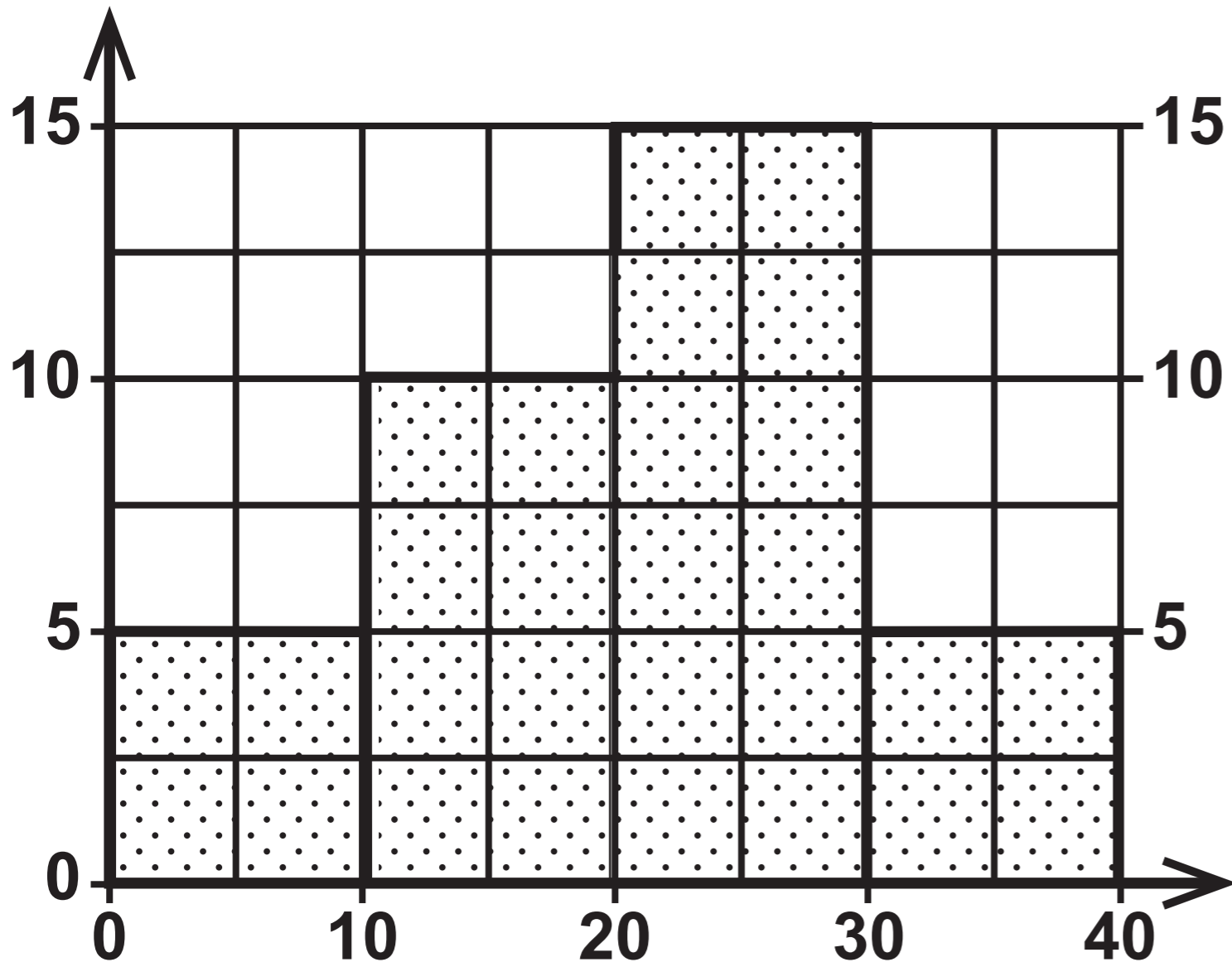
Diagram NOT drawn to scale



Question 4

YEAR 9

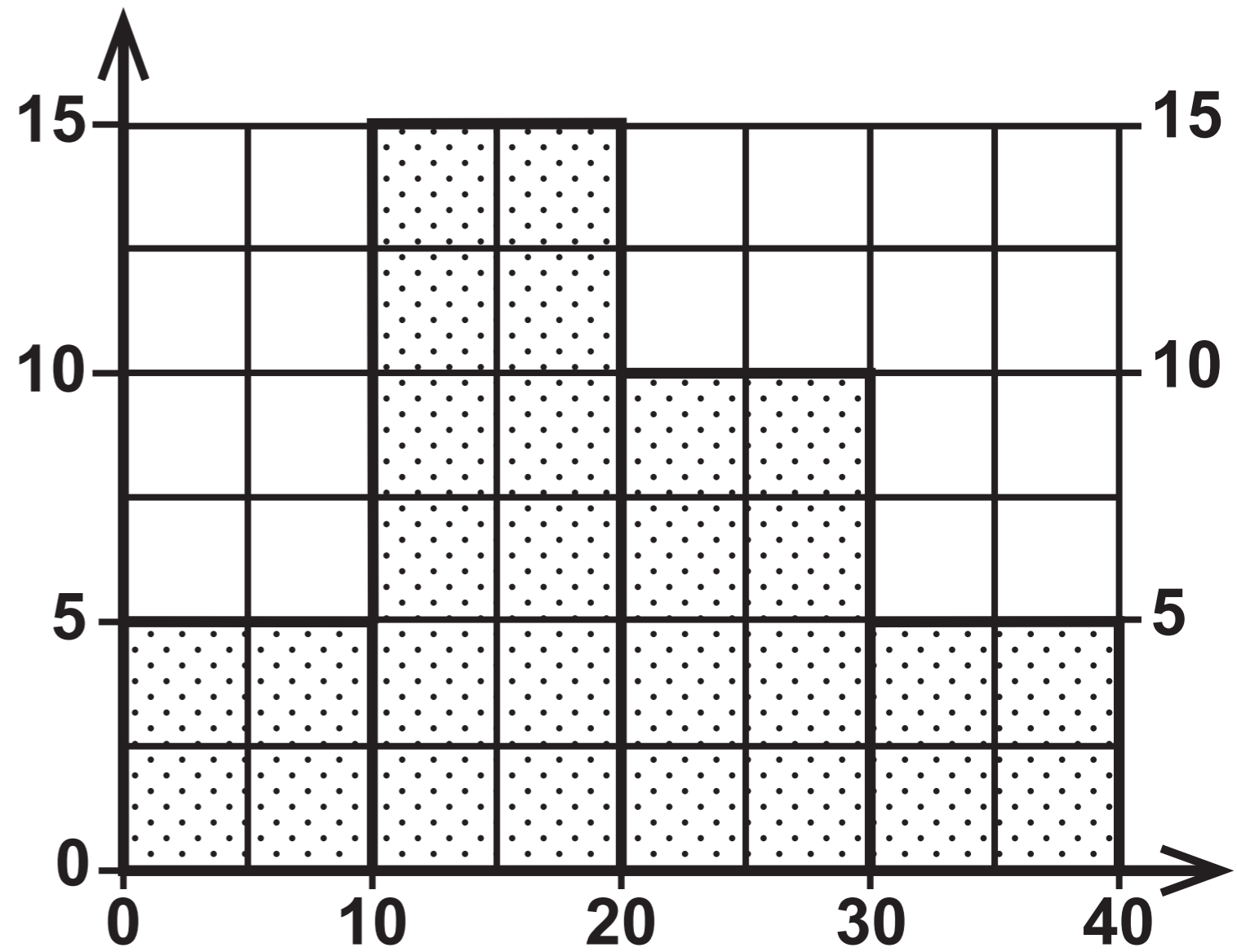
Frequency



Time (minutes)

YEAR 10

Frequency



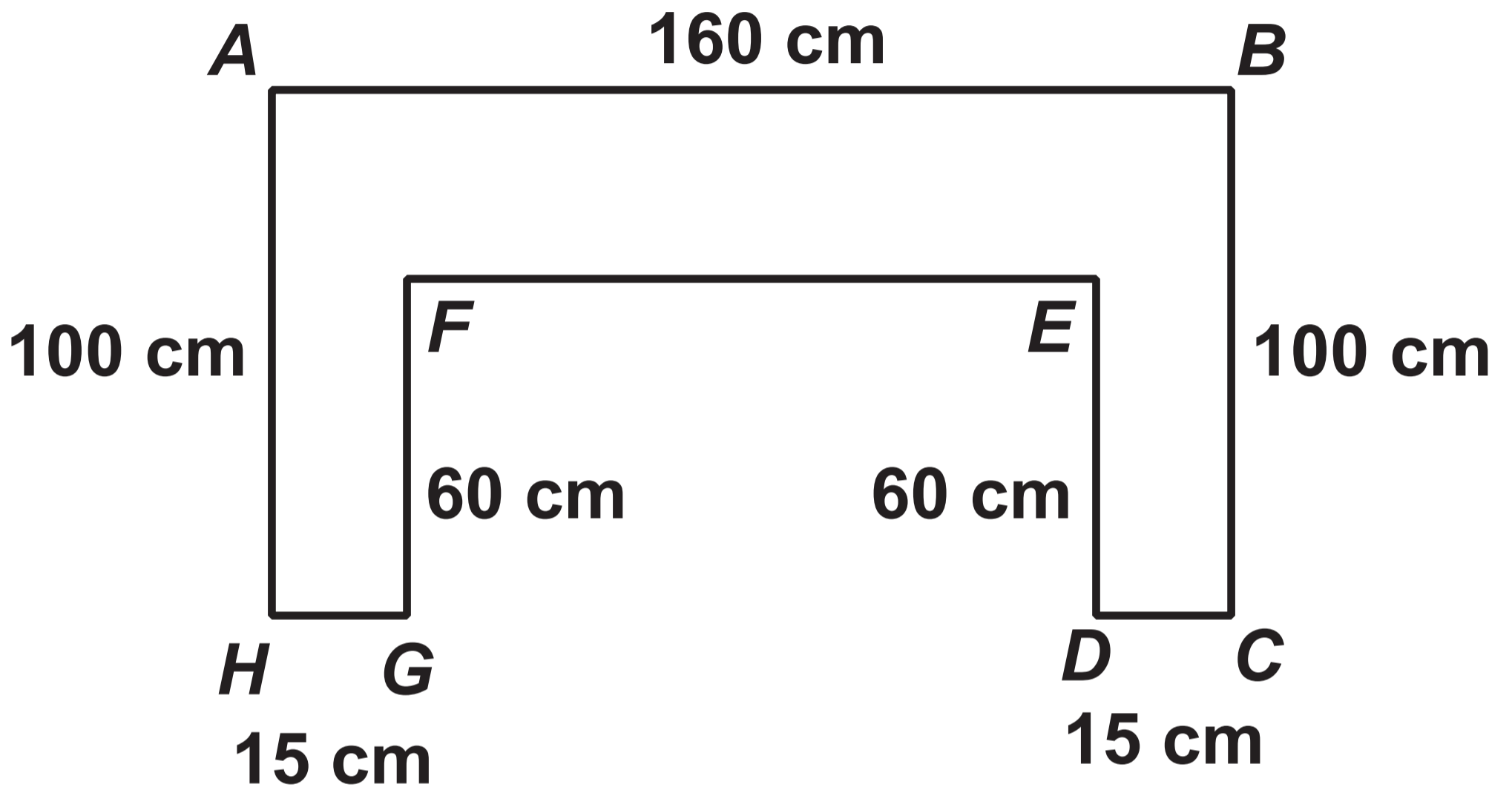
Time (minutes)

Question 8

Band	Taxable income	Tax rate
Personal allowance	Up to 10 000 dollars	0%
Basic rate	10 000 dollars to 30 000 dollars	10%
Higher rate	Over 30 000 dollars	25%

Question 9

Diagram NOT drawn to scale



Question 11

Diagram 1

Slender-billed gulls

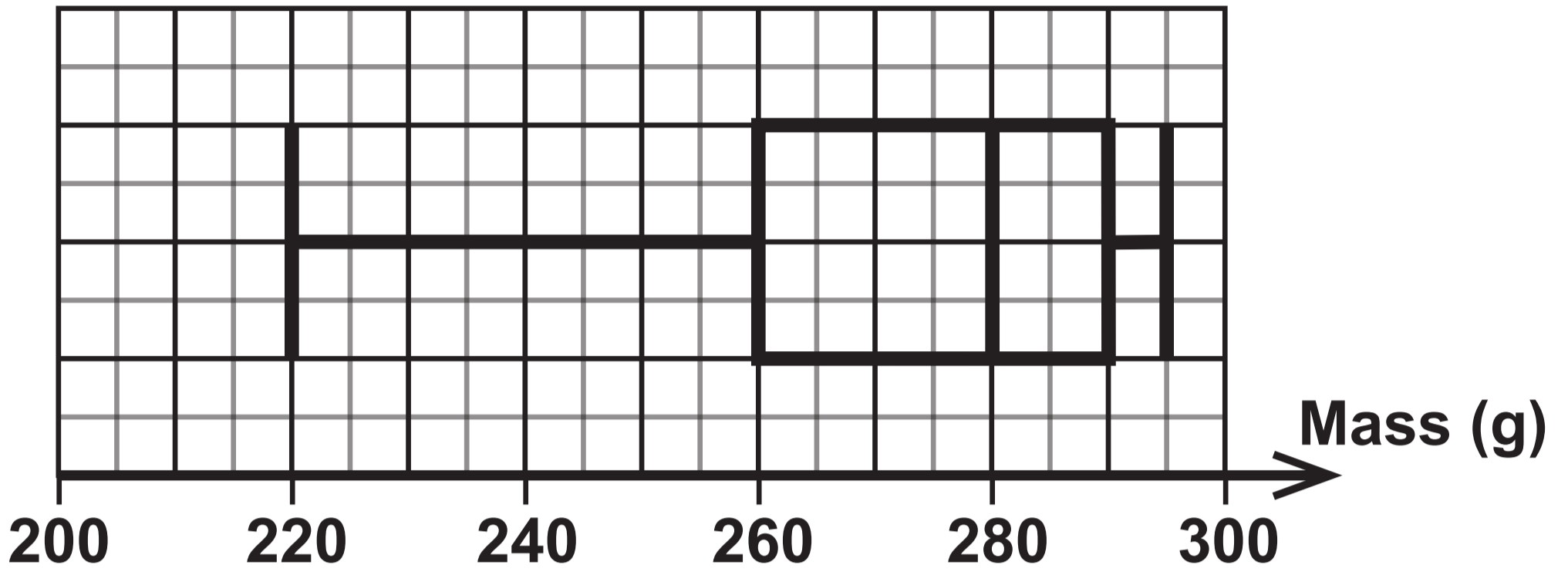


Diagram 2

Little gulls

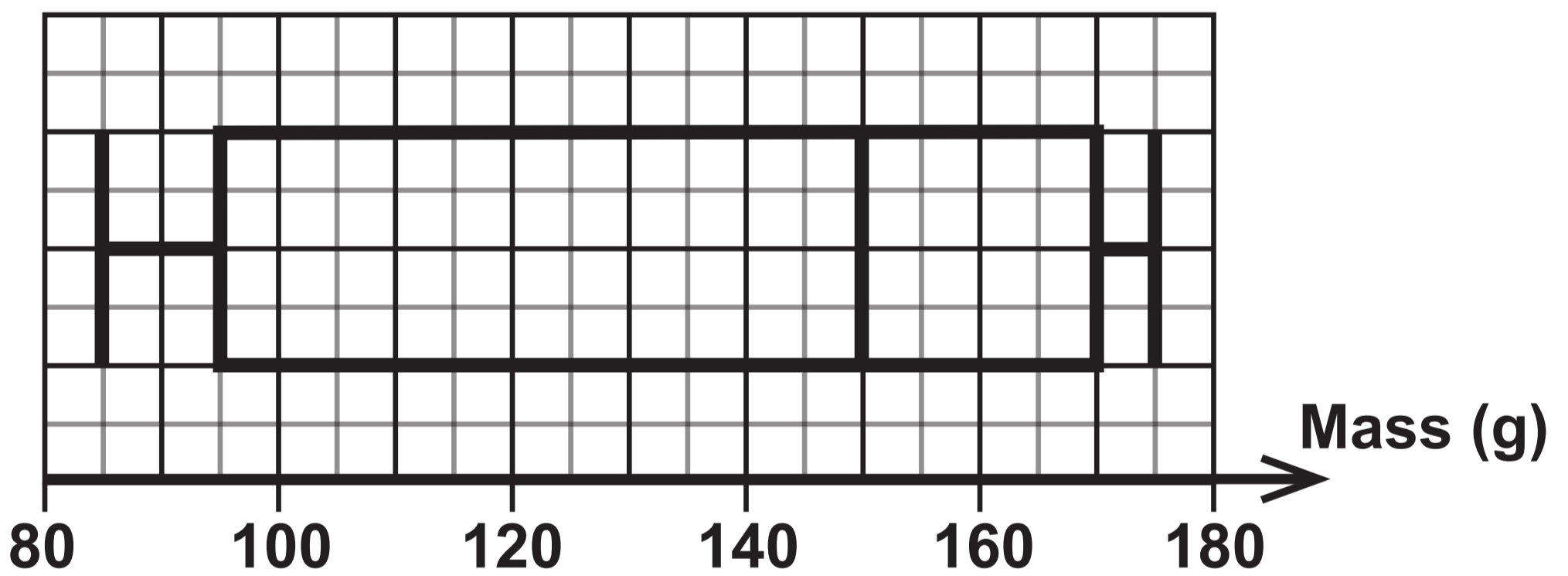
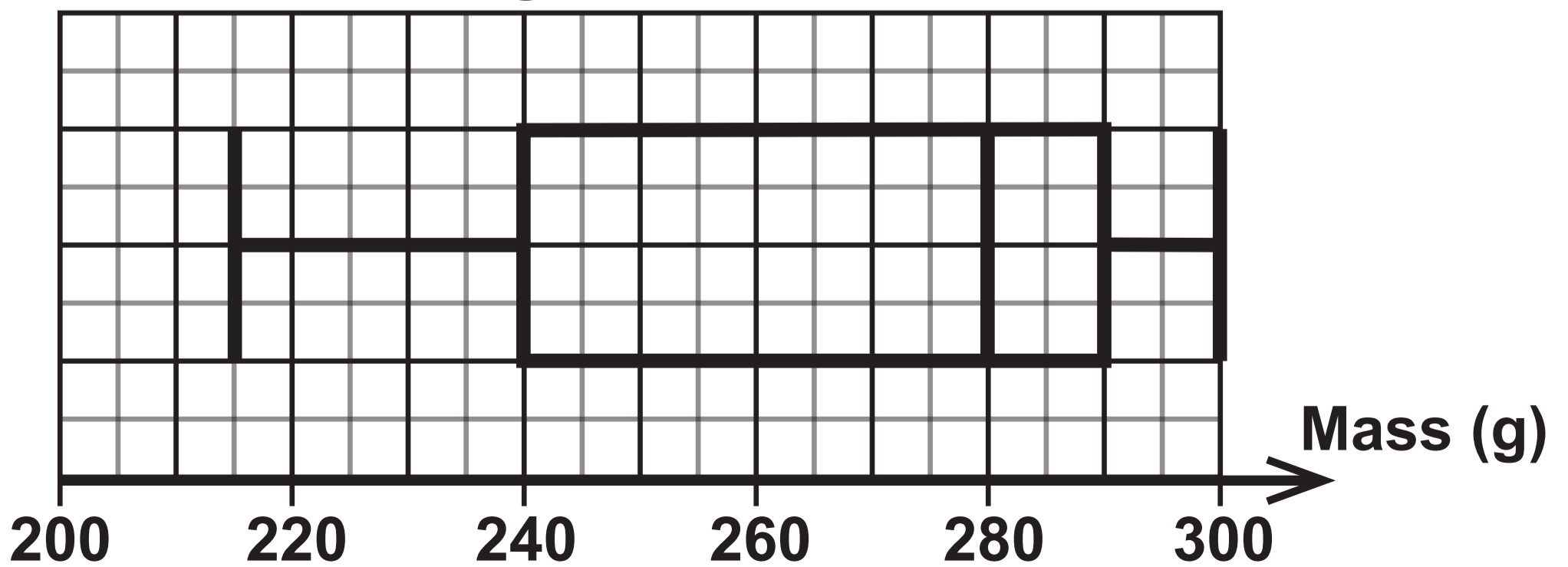



Diagram 3

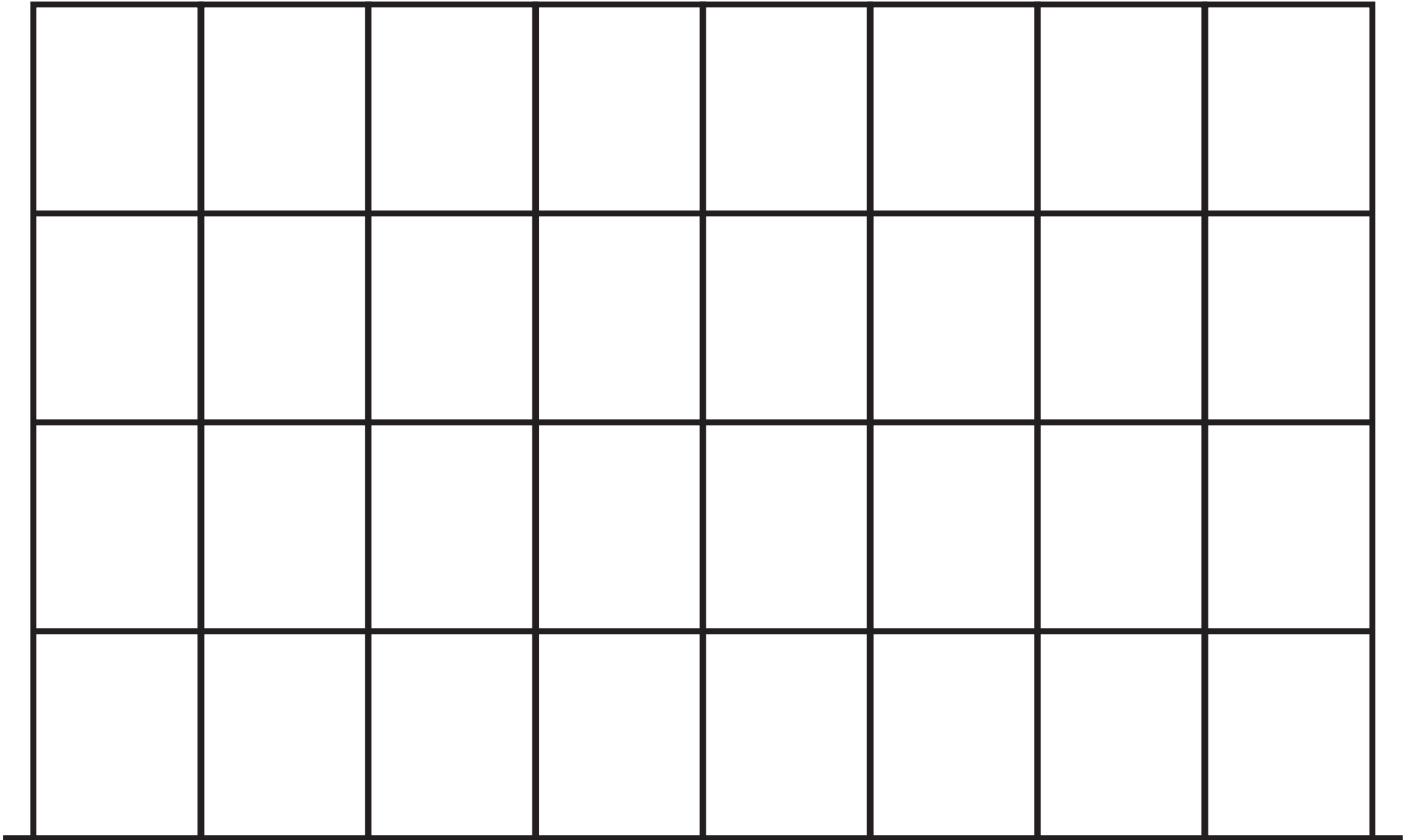
Black-headed gulls



Question 12 (b)

Diagram NOT drawn to scale

Key:  = Container



Question 12 (b) (ii)

Blank space for plan view

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MATHEMATICS – NUMERACY**

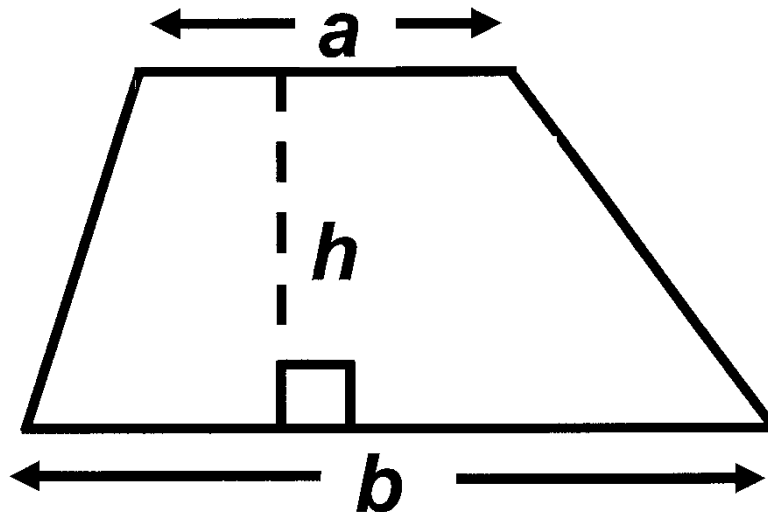
**FORMULA LIST
INTERMEDIATE TIER
GCSE**

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

