

GCSE 3310U10-1



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

**TUESDAY, 7 MAY
2019 – MORNING**

**1 hour 30 minutes
(plus your additional
time allowance)**

**THE USE OF A
CALCULATOR IS NOT
PERMITTED IN THIS
EXAMINATION**

For Examiner's use only		
Question	Maximum Mark	Mark Awarded
1.	7	
2.	4	
3.	5	
4.	11	
5.	4	
6.	6	
7.	4	
8.	14	
9.	8	
10.	2	
Total	65	

Surname:	
Other Names:	
Centre Number:	
Candidate Number:	0

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 spare Diagram Booklet.

Model for Question 1 (c).

(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 continuation pages at the back of the booklet. Question numbers must be given for all work written on the continuation 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 4 (a), the assessment will take into account the quality of your linguistic and mathematical organisation, communication and accuracy in writing.

(Turn over)

1. Elwyn wants to put a shed in his garden.

(a) Look at the diagram for Question 1 (a) in the separate Diagram Booklet.

The diagram shows a plan of Elwyn's garden.

The scale is

1 cm represents 1 metre.

It shows the position of the house, the hedge and the flower bed.

continued on the next page . . .

(Turn over)

Question 1 continued

The base of Elwyn's shed is rectangular.

It is 4 m long and 3 m wide.

He wants the shed to be:

- at least 3 m from the house,**
- at least 1 m from the hedge,**
- exactly 2 m from the flower bed.**

Draw a possible position for the shed on the diagram.

[3 marks]

continued on the next page . . .

(Turn over)

Question 1 continued

1. (b) Elwyn wants to cover the base of the shed with carpet tiles.

The carpet tiles cost £15

for each 1 m^2

Calculate the total cost of the carpet tiles.

(Turn over)

[3 marks]

continued on the next page . . .

(Turn over)

Question 1 continued

- 1. (c) Ask for the model for Question 1 (c).**

The model represents Elwyn's hedge.

Which of the words below best describes the shape of the hedge?

Circle your answer.

sphere
cylinder
cone
cube
cuboid

[1 mark]
(Turn over)

2. An apartment block is 12 floors high. It also has 3 floors of underground parking.

All floors are connected by a lift.

The ground floor is labelled

LEVEL 0 in the lift.

The first floor of underground parking is one floor below the ground floor.

It is labelled LEVEL – 1 in the lift.

continued on the next page . . .

(Turn over)

Question 2 continued

2. (a) What is the third floor of underground parking labelled in the lift?

Circle your answer.

LEVEL 3
LEVEL -3
LEVEL -2
LEVEL 13
LEVEL 2

[1 mark]

continued on the next page . . .

(Turn over)

Question 2 continued

2. (b) Jen is at LEVEL 7

**She travels down 9 floors to
where she parks her car.**

**What level is this labelled in
the lift?**

[1 mark]

continued on the next page . . .

(Turn over)

Question 2 continued

2. (c) Anna parks her car on the floor that is labelled LEVEL – 1 in the lift.

She travels up 10 floors to her apartment to collect a present for her friend, Brodie.

She then travels down 5 floors to Brodie’s apartment.

What level is Brodie’s apartment labelled in the lift?

(Turn over)

14

[2 marks]

(Turn over)

3. Gwenda wants to raise money for the children's ward of her local hospital.

She would like to complete a sponsored walk of 90 miles along part of the coastal path of Wales.

(a) Gwenda is sponsored a total of £3 per mile by her family and friends.

Also, a local company will give her 40% of the total amount she receives from her family and friends.

continued on the next page . . .

(Turn over)

[3 marks]

continued on the next page . . .

(Turn over)

Question 3 continued

3. (b) Gwenda knows that 5 miles is approximately 8 kilometres. How many kilometres is 90 miles?

[2 marks]

(Turn over)

4. A local community group is going to have a stall selling lemonade at a summer fete.

The group needs to buy cups and bottles of lemonade.

Each bottle of lemonade contains 1000 ml and costs 90p.

One packet of 100 cups costs £4

The group plans to buy enough to sell 300 cups of lemonade.

Each cup will contain 200 ml of lemonade.

continued on the next page . . .

(Turn over)

Question 4 continued

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

How much will it cost to buy everything that is needed to sell 300 cups of lemonade?

[6 marks + 2 marks OCW]

(Turn over)

continued on the next page . . .

(Turn over)

Question 4 continued

4. (b) The community group sells each cup of lemonade for 50p. How much profit will the community group make if they sell all 300 cups of lemonade?

(Turn over)

25

[3 marks]

(Turn over)

5. Climbers use the rule that the temperature decreases by 6°C for every 1000 metres that they climb.

This can be written as a formula, as shown for Question 5 in the separate Diagram Booklet.

Mary plans to climb Snowdon in Wales before she climbs Mount Kilimanjaro in Africa.

continued on the next page . . .

(Turn over)

Question 5 continued

The table below gives the gain in height when climbing each mountain.

The gain in height is given in metres.

MOUNTAIN	GAIN IN HEIGHT
Snowdon	945 metres
Mount Kilimanjaro	4085 metres

ESTIMATE the temperature loss when Mary climbs each mountain. You must show all your working.

(Turn over)

Estimate of Snowdon

temperature loss = _____ °C

Estimate of Mount Kilimanjaro

temperature loss = _____ °C

[4 marks]

(Turn over)

6. Sioned works in a grocery shop. She has made a poster for the window of the shop.

Strawberries £8.60 per kg	Raspberries Today's special offer per kg
--	---

Sioned has forgotten to write the price of raspberries on the poster.

Mr Thomas buys

$\frac{1}{4}$ kg of strawberries and

$1\frac{1}{2}$ kg of raspberries.

continued on the next page . . .

(Turn over)

Question 6 continued

He pays with a £20 note.

He gets £2.55 change.

Calculate the price of

1 kg of raspberries.

You must show all your working.

(Turn over)

7. **Sunflower seeds come in a packet.**

Sunflower seeds

Plant in May

**Grow to heights of up to
90 cm (36 inches)**

**Dieter planted 8 sunflower seeds
in May.**

**He labelled the sunflowers
A, B, C, D, E, F, G and *H*.**

**On 21st August, he measured the
heights of all the sunflower plants
in cm.**

continued on the next page . . .

(Turn over)

Question 7 continued

**Look at the diagram for Question 7
in the separate Diagram Booklet.**

The diagram is a graph.

Dieter drew the graph shown.

- 7. (a) Use the graph to answer each
of the following questions.**

continued on the next page . . .

(Turn over)

Question 7 (a) continued

- 7. (a) (i) What fraction of the height of the tallest sunflower is the height of the shortest sunflower?**

Circle your answer.

$\frac{3}{10}$	$\frac{3}{7}$	$\frac{3}{5}$	$\frac{3}{8}$	$\frac{3}{80}$
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[1 mark]

(Turn over)

Question 7 (a) continued

- 7. (a) (ii) What is the ratio of the number of sunflowers with heights less than 55 cm to the number of sunflowers with heights greater than 55 cm?
Circle your answer.**

5 : 3	3 : 5	1 : 3	3 : 1	1 : 1
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**[1 mark]
(Turn over)**

Question 7 continued

7. (b) Dieter's friend, Glyn, also planted sunflower seeds. Glyn's tallest sunflower grew to a height of 24 inches. Is this taller or shorter than Dieter's tallest sunflower? You must show all your working to support your answer.

Taller than Dieter's tallest sunflower

Shorter than Dieter's tallest sunflower

[2 marks]

(Turn over)

8 . Aled and Gareth went on holiday to France.

(a) The total cost of the holiday was £660

- **Aled's mother paid $\frac{1}{3}$ of the total cost.**

- **Aled and Gareth shared the remaining cost in the ratio 1 : 9**

(i) Calculate how much each person paid towards the cost of the holiday.

(Turn over)

Aled's mother paid £ _____

Aled paid £ _____

Gareth paid £ _____

[4 marks]

8. (a) (ii) Explain how you could use your answers to check that they are correct.

[1 mark]

(Turn over)

Question 8 continued

**8. (b) Gareth's luggage weighed
21.13 kg.**

**This was over the maximum
of 20 kg allowed.**

**Gareth removed items from his
luggage so that its mass was:**

- **as close to 20 kg as possible,**
- **NOT GREATER than 20 kg.**

continued on the next page . . .

(Turn over)

Question 8 (b) continued

From the following list of items, which TWO items did Gareth remove?

You must show all your working.

Coat	820 g
Headphones	300 g
Jumper	320 g
Book	340 g
Hat	200 g

(Turn over)

Question 8 continued

8. (c) Look at the diagram for Question 8 (c) in the separate Diagram Booklet.

The diagram is a conversion graph showing pounds (£) and euros.

Before going on holiday, Aled made a conversion graph to help him understand prices in euros.

Use Aled's conversion graph to answer the following questions.

continued on the next page . . .

(Turn over)

Question 8 (c) continued

8. (c) (i) A camera costs £90

How much is this in euros?

Camera costs _____ euros

[2 marks]

continued on the next page . . .

(Turn over)

Question 8 (c) continued

8. (c) (ii) A meal costs £25

How much is this in euros?

Meal costs _____ euros

[2 marks]

continued on the next page . . .

(Turn over)

Question 8 continued

8. (d) Gareth looked at exchange rates for buying euros.

He recorded the exchange rates for the previous 60 days, as shown below.

$\text{£}1 = B$ 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

continued on the next page . . .

(Turn over)

Question 8 (d) continued

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

Look at the diagram for Question 8 (d) in the separate Diagram Booklet.

8. (d) (i) Complete the frequency diagram.

[1 mark]

continued on the next page . . .

(Turn over)

Question 8 (d) continued

8. (d) (ii) Which is the modal group?
Circle your answer.

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

[1 mark]

(Turn over)

- 9. Look at the diagram for Question 9 in the separate Diagram Booklet. The diagram shows a scatter diagram.**

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 in the diagram.

Use the scatter diagram to answer the following questions.

continued on the next page . . .

(Turn over)

Question 9 continued

- 9. (a) State the fuel economy of the car with the largest engine size.**

**Fuel economy _____ miles per
gallon
[1 mark]**

- (b) State the engine size of the car with a fuel economy of 40 miles per gallon.**

**Engine size _____ litres
[1 mark]**

continued on the next page . . .

(Turn over)

Mean fuel economy is

_____ miles per gallon

[3 marks]

continued on the next page . . .

(Turn over)

Question 9 continued

9. (c) (ii) Why is this not a suitable average for cars with engine sizes of less than 1.5 litres?

[1 mark]

(d) Draw a line of best fit on the scatter diagram.

[1 mark]

continued on the next page . . .

(Turn over)

Question 9 continued**9. (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.

(Turn over)

[1 mark]

(Turn over)

10. Look at the diagram for Question 10 in the separate Diagram Booklet.

The diagram shows a map of Wales.

A helicopter pilot is planning a route from Milford Haven to Ruabon and then on to Swansea.

To plan the flights, the pilot needs to find the bearings from a map.

(a) Find the bearing of Ruabon from Milford Haven.

[1 mark]

(Turn over)

Question 10 continued

**10. (b) Find the bearing of Swansea
from Ruabon.**

[1 mark]

END OF PAPER

TOTAL 65 MARKS

(Turn over)

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

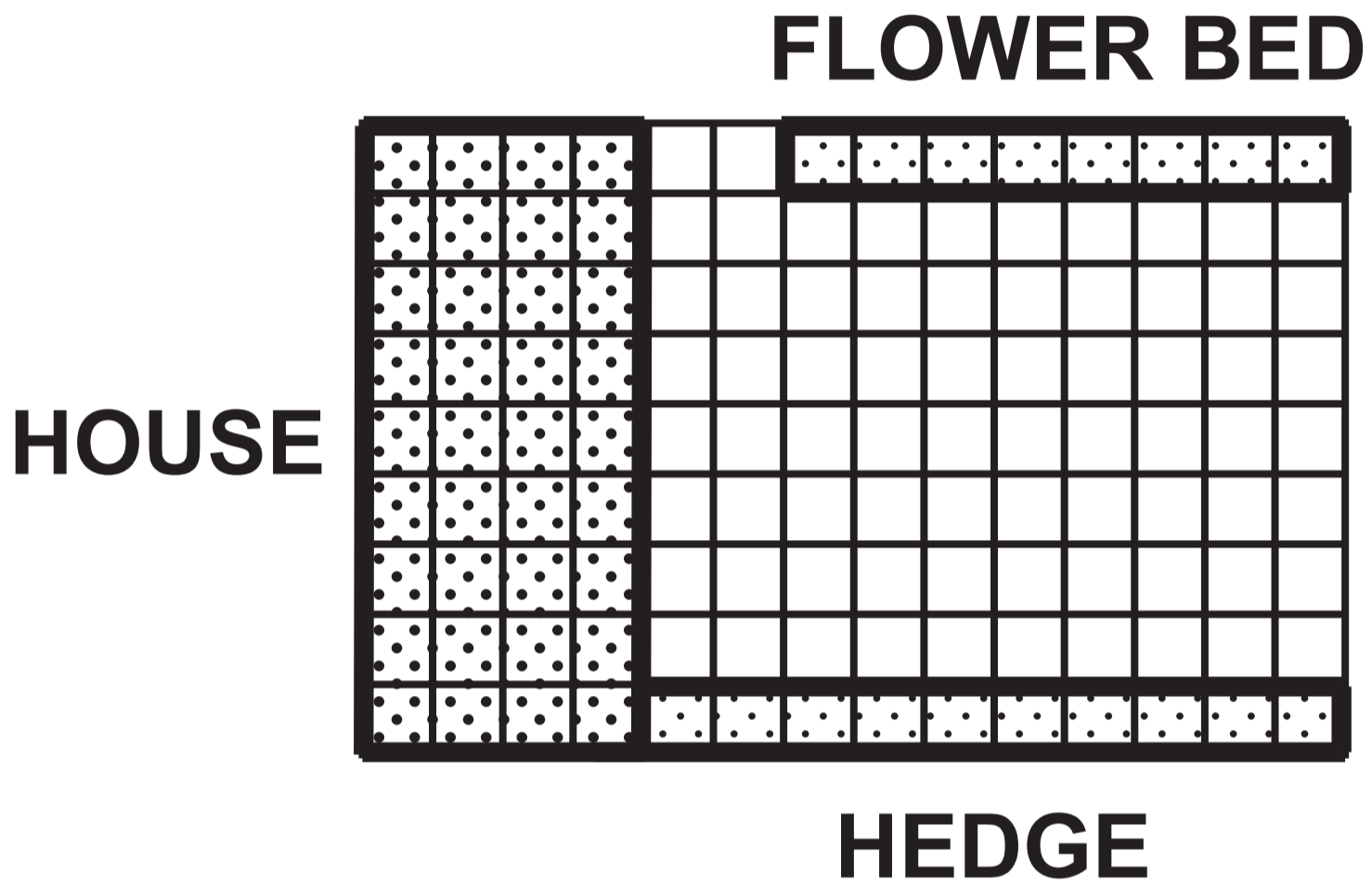
TUESDAY, 7 MAY 2019 – MORNING

Diagram Booklet

Surname:	
Other Names:	
Centre Number:	
Candidate Number:	0

Question 1 (a)

Scale: 1 cm represents 1 metre



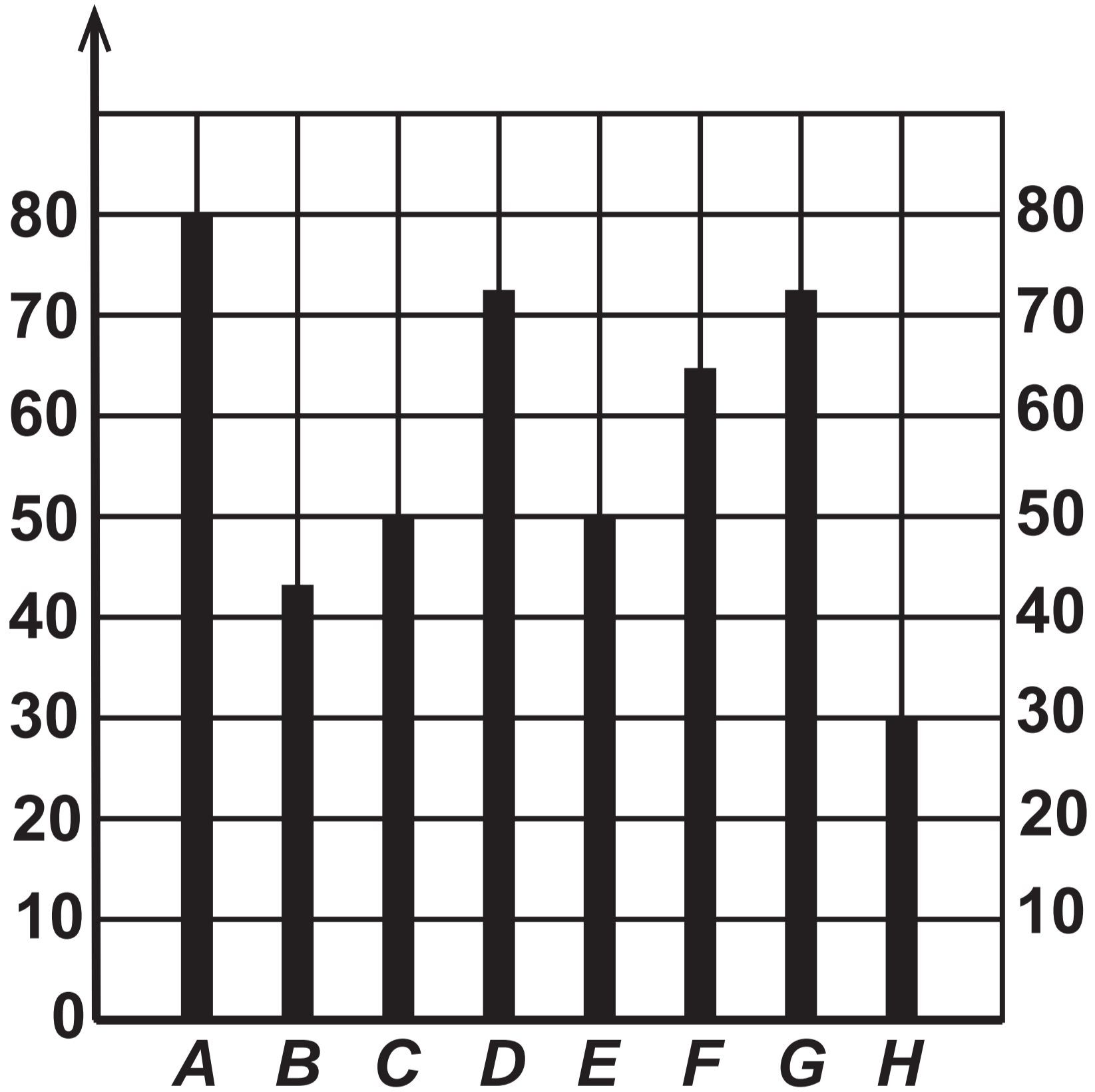
Question 5

Formula

$$\text{temperature loss} = \frac{6 \times \text{gain in height in metres}}{1000}$$

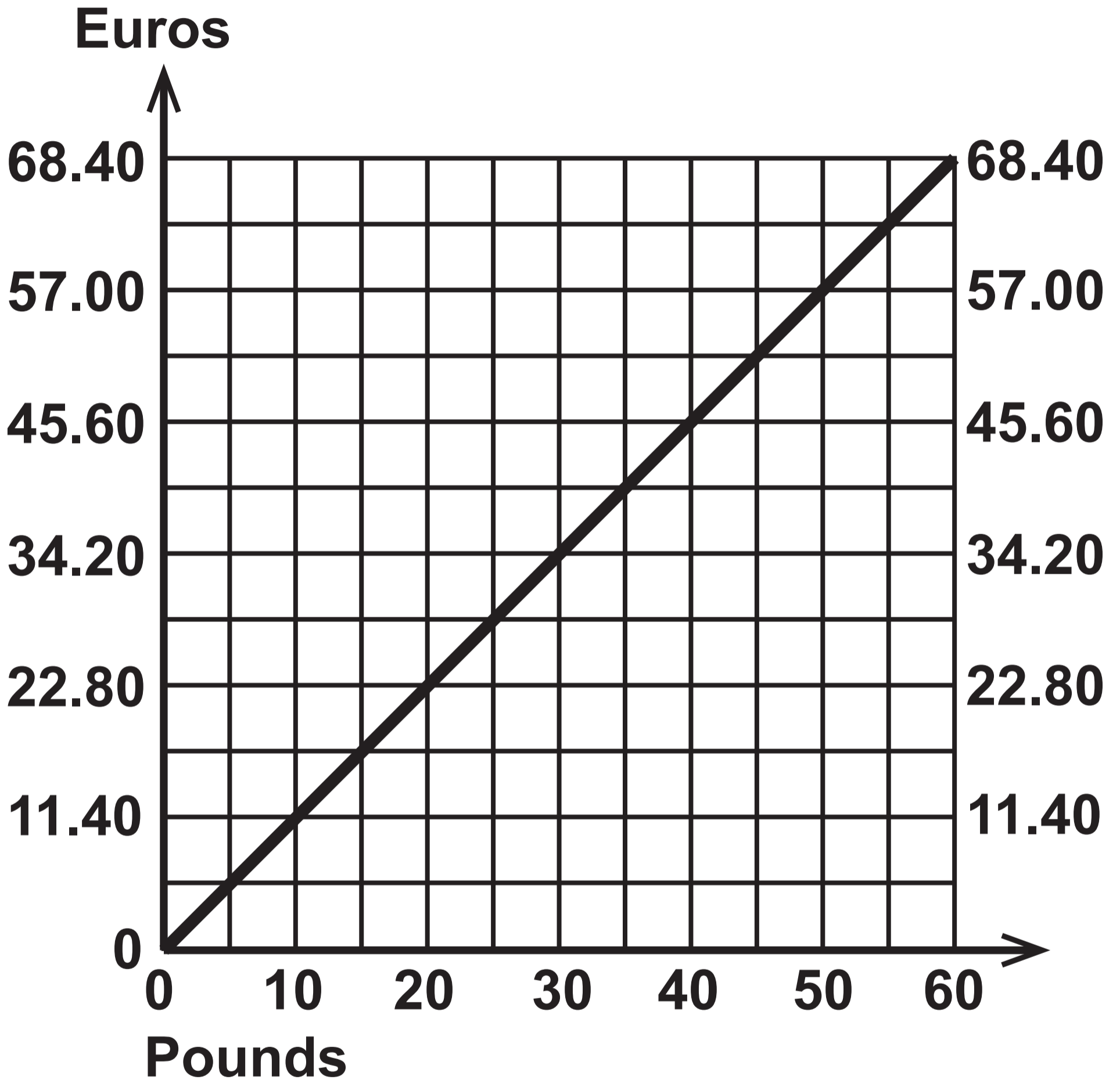
Question 7

Height (cm)



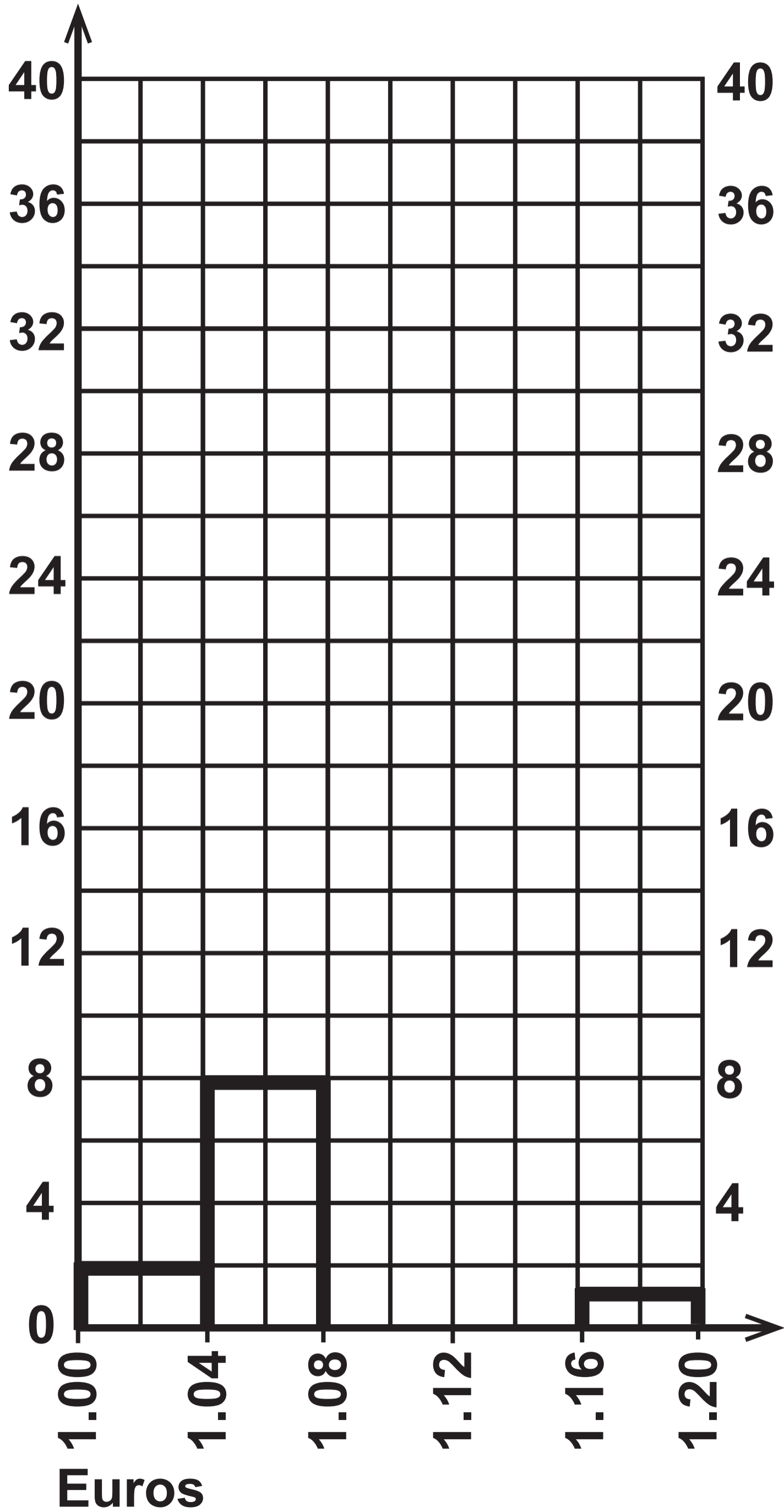
Sunflowers

Question 8 (c)



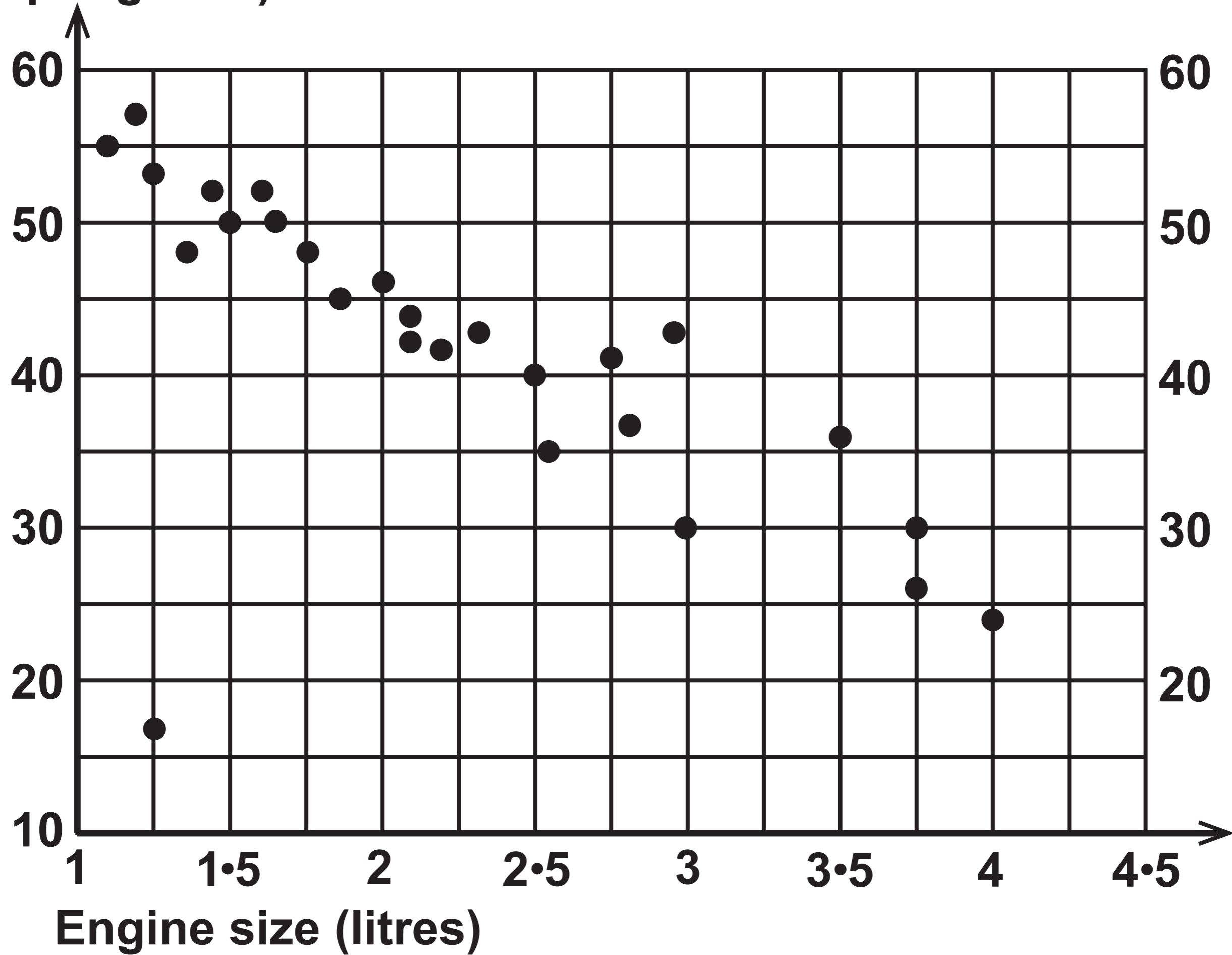
Question 8 (d)

Frequency



**Fuel economy
(miles per gallon)**

Question 9



Question 10

KEY:

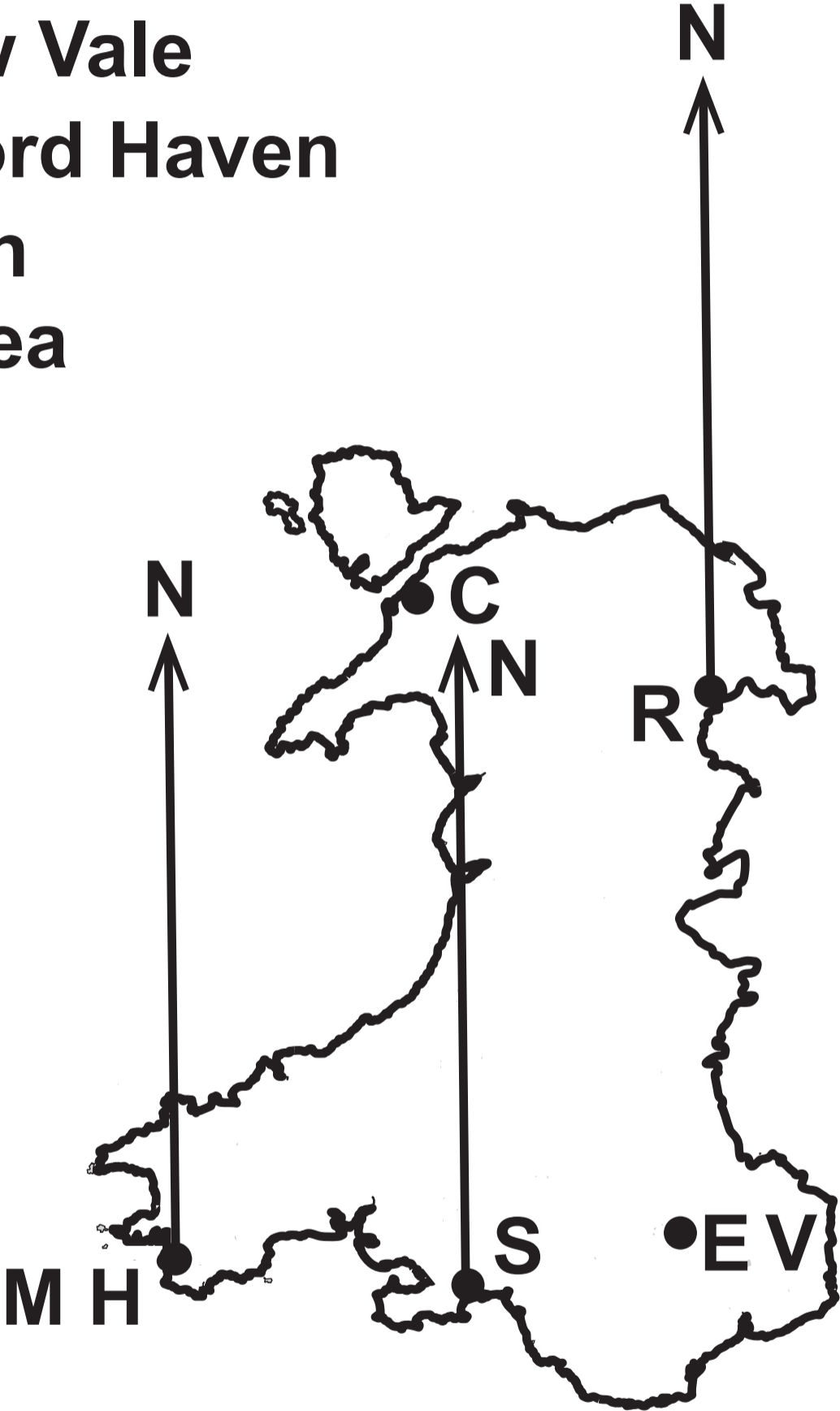
C - Caernarfon

E V - Ebbw Vale

M H - Milford Haven

R - Ruabon

S - Swansea



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MATHEMATICS – NUMERACY

UNIT 1: NON – CALCULATOR

FOUNDATION TIER

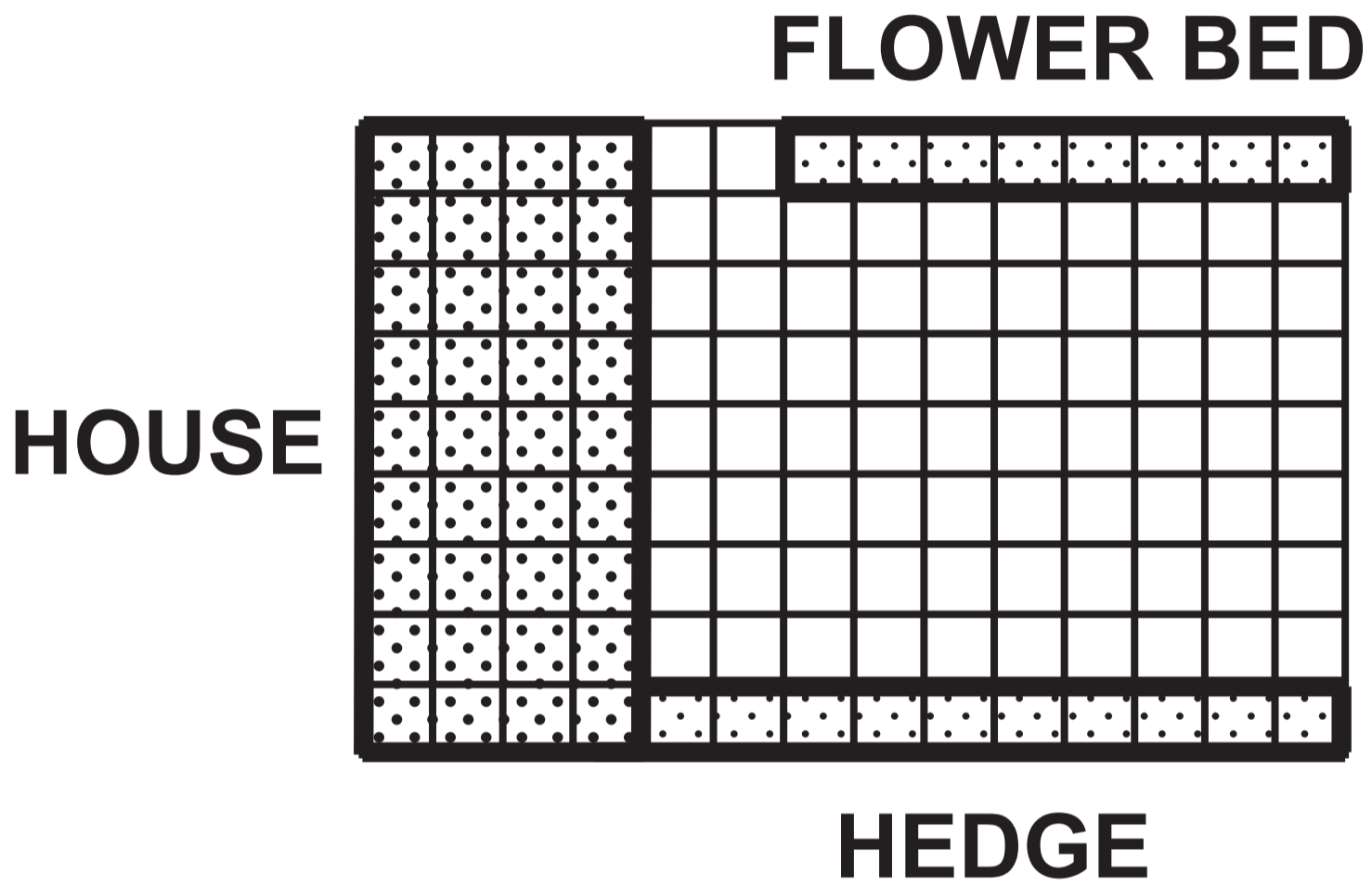
TUESDAY, 7 MAY 2019 – MORNING

Spare Diagram Booklet

Surname:	
Other Names:	
Centre Number:	
Candidate Number:	0

Question 1 (a)

Scale: 1 cm represents 1 metre



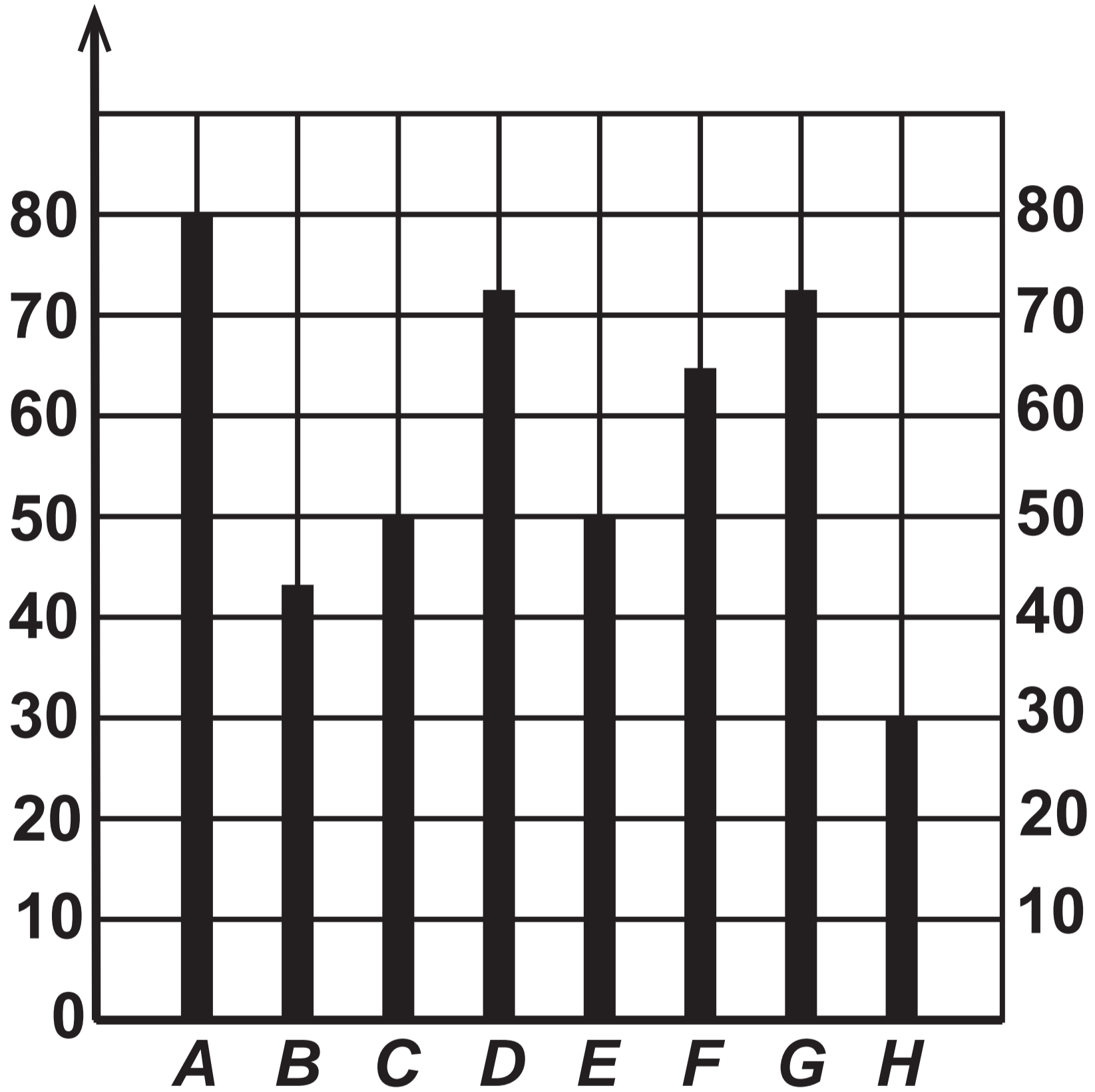
Question 5

Formula

$$\text{temperature loss} = \frac{6 \times \text{gain in height in metres}}{1000}$$

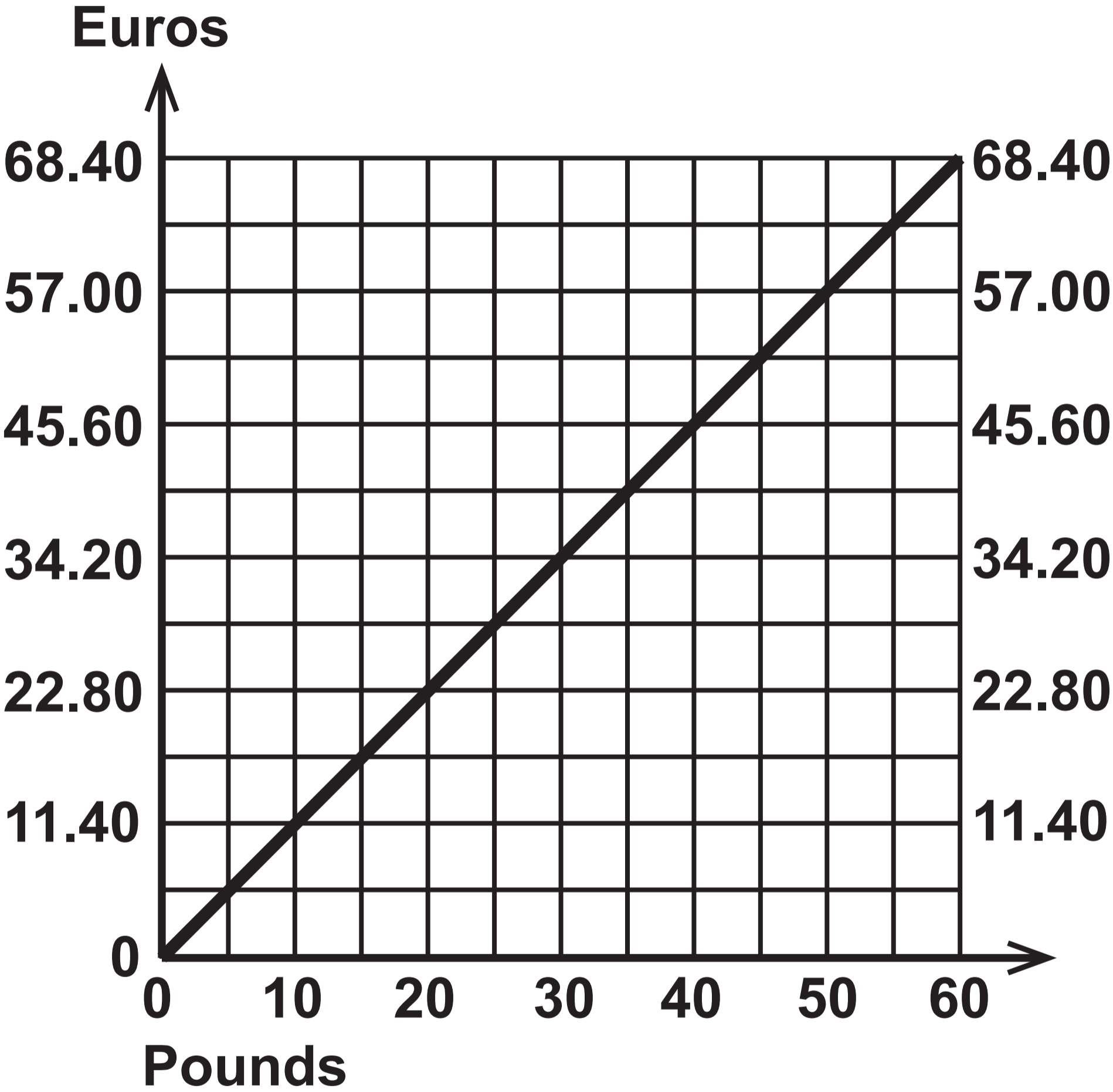
Question 7

Height (cm)



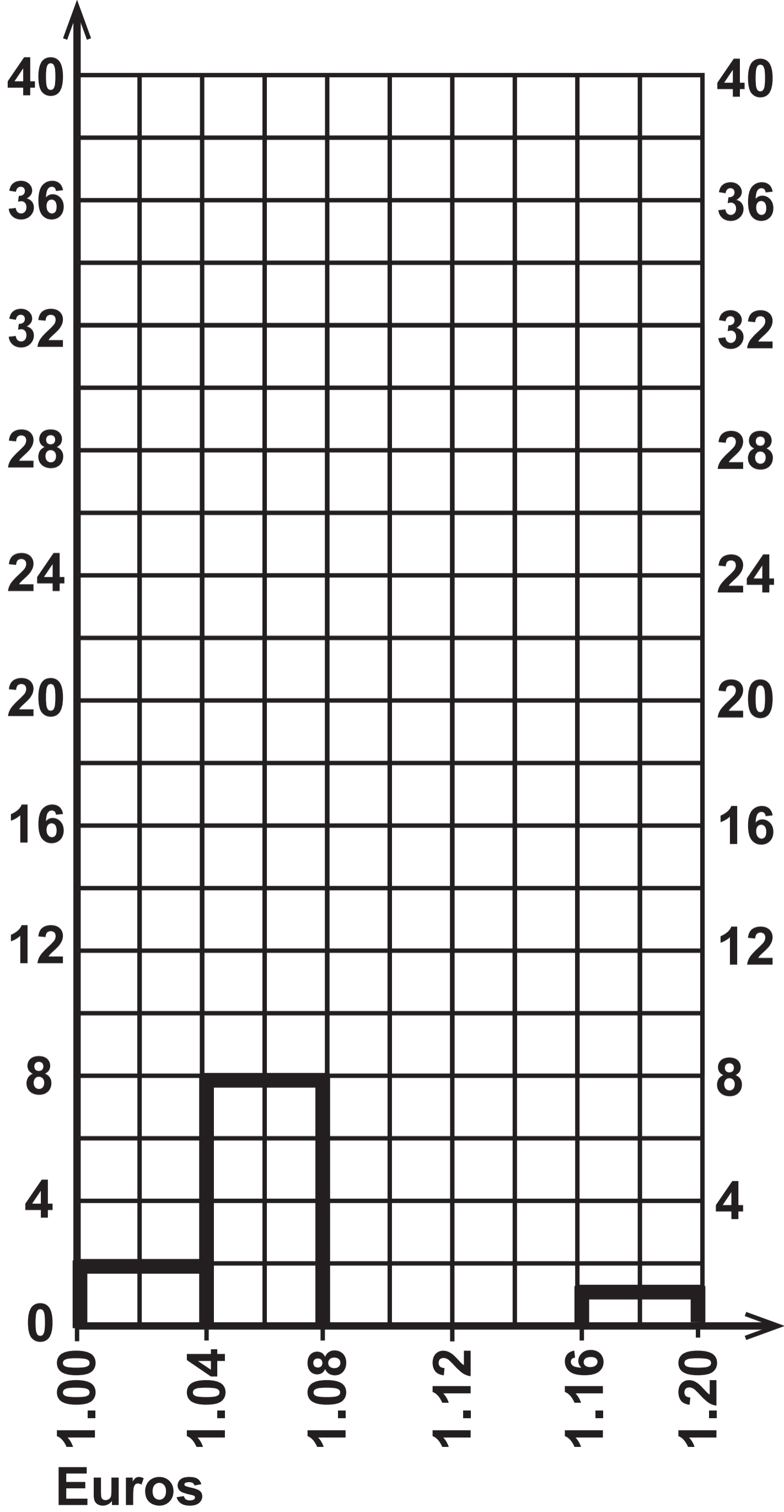
Sunflowers

Question 8 (c)



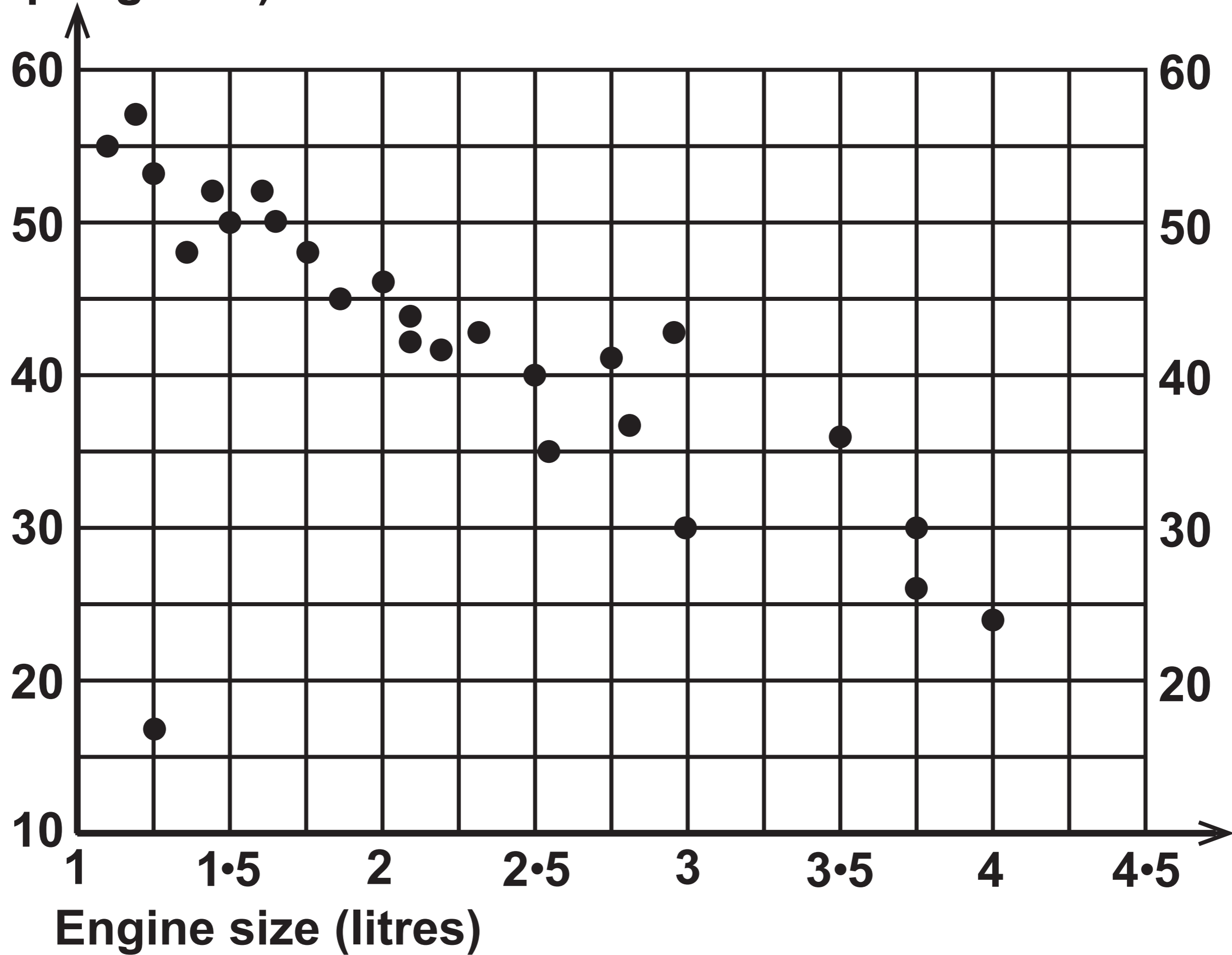
Question 8 (d)

Frequency



**Fuel economy
(miles per gallon)**

Question 9



Question 10

KEY:

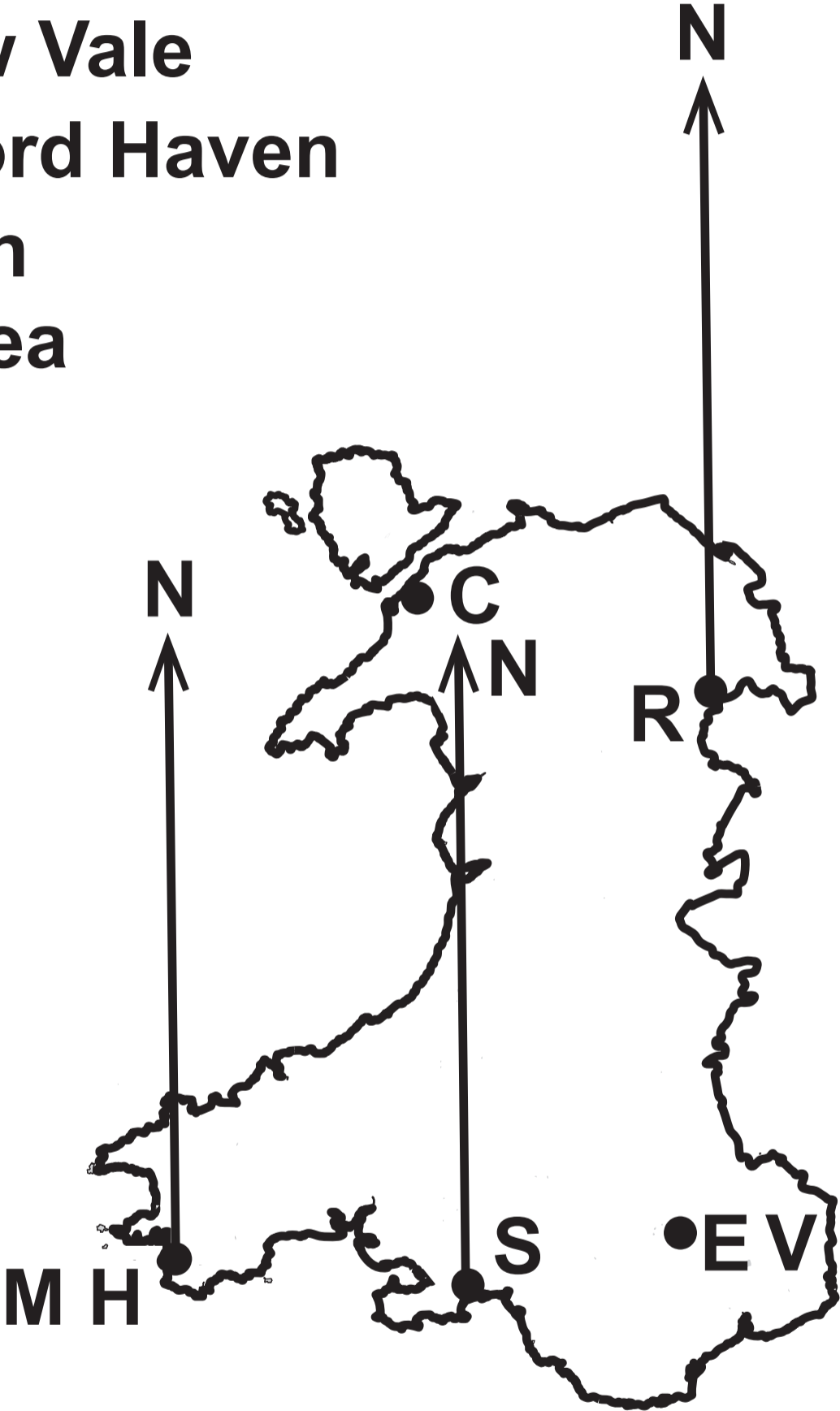
C - Caernarfon

E V - Ebbw Vale

M H - Milford Haven

R - Ruabon

S - Swansea



**GCSE – NEW
MATHEMATICS**



and

NUMERACY

**FORMULA LIST
FOUNDATION TIER
GCSE**

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

