GCSE 3310U30-1

MATHEMATICS – NUMERACY
UNIT 1: NON – CALCULATOR
INTERMEDIATE TIER

TUESDAY, 5 NOVEMBER 2019 – MORNING

1 hour 45 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.	8	
3.	5	
4.	3	
5.	4	
6.	8	
7.	2	
8.	8	
9.	11	
10.	6	
11.	6	
12.	7	
13.	5	
Total	80	

Surname:	
First name(s):	
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.

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 pages at the back of the booklet. Question numbers must be given for all work written on the additional page(s).

Take π as 3•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 6, the assessment will take into account the quality of your linguistic and mathematical organisation, communication and accuracy in writing.

(Turn over)

1. Every year, ABER YOUNG FARMERS club organises a sponsored walk.

(a) This year, the length of the walk is 20 miles.

Calculate the length of the walk in km.

[2 marks]

continued on the next page . . .

Question 1 continued

1. (b) Last year, the walk raised a total of £3600

It cost £180 to organise the walk last year.

Give the cost of organising the walk as a percentage of the total raised.

[2 marks]

continued on the next page . . .

Question 1 continued

1. (c) This year, walkers will be charged to take part.

ABER YOUNG FARMERS decided that:

$$\text{charge in pence} = 3 \times \text{height of the walker in cm}$$

What is the height of the shortest walker who will need to pay a charge of more than £5?

Give your answer correct to the nearest cm.

You must show all your working.

[3 marks]

2. Look at the Venn diagrams for Question 2 in the separate Diagram Booklet.

SOUND5 sells pairs of earphones and USB leads.

The Venn diagrams show the number of customers who visited the shop last Friday and last Saturday.

No customers visited the shop on both days.

No customers bought more than 1 pair of earphones and 1 USB lead.

continued on the next page . . .

Question 2 continued

Earphones sell for £15 and

USB leads sell for £3

2. (a) How much did SOUND5 customers spend buying USB leads on FRIDAY? **5**

[2 marks]

continued the next page . . .

Question 2 continued

2. (b) Over the two days, how many customers did NOT buy either earphones or a USB lead?

Circle your answer.

27	**45**	**40**	**57**	**72**

[1 mark]

Question 2 continued

2. (c) What fraction of FRIDAY's customers bought both earphones and a USB lead? Circle your answer.

$\frac{1}{10}$	$\frac{1}{4}$	$\frac{10}{40}$	$\frac{10}{67}$	$\frac{40}{67}$

[1 mark]

continued on the next page . . .

Question 2 continued

2. (d) How much money in total did SOUND5 customers spend on buying earphones, USB leads or both on SATURDAY?

You must show all your working.

[4 marks]

3. The students in Mr Griffin's mathematics class all recorded how long they spent on their last mathematics homework.
None of his students spent less than 10 minutes on this homework.
All of his students attempted the homework.

Look at the diagram for Question 3 in the separate Diagram Booklet.
The diagram is a frequency diagram.

continued on the next page . . .

Question 3 continued

Mr Griffin has drawn a frequency diagram to display the times recorded by his students. He used groups of width 10 minutes:

$10 \leq$ time < 20

$20 \leq$ time < 30

and so on.

3. (a) Did any student get all their mathematics homework correct?

Yes ☐ **No** ☐ **Can't tell** ☐

You must give a reason for your answer.

[1 mark]

continued on the next page . . .

Question 3 continued

3. (b) How many students are there in Mr Griffin's mathematics class?

[2 marks]

Question 3 continued

3. (c) Consider the students who spent less than 40 minutes on their homework. What fraction of these students spent 30 minutes or more on their homework?

[2 marks]

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

Emily has drawn a conversion graph, as shown.
She uses it to help her brother understand how to convert knots to miles per hour.

Complete each of the following statements.

(a) 23 miles per hour is equal to

_____ knots.

_____

_____

[1 mark]

4. (b) 5 knots is equal to _____ miles per hour.

[2 marks]

5. Look at the information provided for Question 5 in the separate Diagram Booklet.

Ms Logan is calculating her next water bill. She knows that her fresh water usage is 20 m^3

On the water company's website she finds the information shown.

Calculate Ms Logan's water bill.

(Turn over)

(Turn over)

[4 marks]

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

Liam buys 3 kg of apples and 2·5 kg of pears.

Pears cost £3.40 per kilogram.

Liam pays a total of £12.40 for the apples and pears.

Calculate the cost of one kilogram of apples.

(Turn over)

(Turn over)

[6 marks + 2 marks OCW]

7. Catrin considers the data she needs to collect to find out if people are happy with their bank.

Catrin includes the following questions in her questionnaire.

Write down one set of possible groups that could be used as answer options for each of these questions.

Catrin's first question is:

Question 1: How old are you?

Groups:

_____

_____

Catrin's second question is:

Question 2: If you have a bank account, how happy are you with your bank?

Groups:

(Turn over)

[2 marks]

8. Look at the diagram for Question 8 in the separate Diagram Booklet.
The diagram is NOT drawn to scale.

Sioned and Rhodri are making a kite. A diagram of the kite they are making is shown.

In the diagram, AC and DB are the diagonals of the kite.
$AE = 22$ cm,
$EC = 28$ cm and
$DE = 20$ cm.

continued on the next page . . .

Question 8 continued

8. (a) Rhodri makes a statement about their kite being able to fly in strong wind,

“The length of the long diagonal must be at least 120% of the length of the short diagonal.”

Assuming Rhodri is correct, should their kite be able to fly in strong wind?

You must show all your working.

[4 marks]

Question 8 continued

8. (b) Sioned says,

“The best length for the tail on a kite depends on the area of the kite.”

Look at the table provided for Question 8 (b) in the separate Diagram Booklet.
Sioned refers to this table, that she has seen on the internet.

Work out the best length of tail for Sioned and Rhodri’s kite.
You must show all your working.

(Turn over)

(Turn over)

[4 marks]

9. (a) Waldo doesn't mind which type of pasta he buys.

In the supermarket, Waldo sees the three packets of pasta shown below.

Strozzapreti pasta	Fusilli pasta	Rigatoni pasta
500 g	400 g	250 g
for £1.25	for 96p	for 65p

Which pasta offers Waldo the best value for money?

You must show all your working.

(Turn over)

[3 marks]

continued on the next page . . .

Question 9 continued

9. (b) An old recipe is given below.

ARRABIATA PASTA SAUCE

Serves 4 people

1 onion

2 × 0·88 lb tins of tomatoes

3 chillies

(i) How many chillies would be needed to make Arrabiata pasta sauce for 48 people?

[2 marks]

9. (b) (ii) How many KILOGRAMS of tinned tomatoes are needed to make Arrabiata pasta sauce to serve 20 people?

[3 marks]

continued on the next page . . .

Question 9 continued

9. (c) A pasta factory in Italy produces 5 km of spaghetti per day.

How many centimetres of spaghetti will this factory produce in 7 days?

Give your answer in standard form.

[3 marks]

10. Look at the table for Question 10 in the separate Diagram Booklet.
The table gives information about tax rates.

Agata is paid in pesos.
The tax rates are shown in the table.

Agata's total earnings before tax are 600 000 pesos.

Calculate how much tax Agata is due to pay.

You must show all your working.

(Turn over)

(Turn over)

Agata’s total tax bill

_____ pesos [6 marks]

11. (a) Gwilym is stacking 6 boxes in his garage.

The height of his garage is 2·5 m, correct to the nearest 10 cm.

5 of Gwilym's boxes each have a height of 40 cm, correct to the nearest 10 cm.

The other box has a height of 55 cm, correct to the nearest 5 cm.

Calculate the maximum possible gap between the stack of 6 boxes and the garage ceiling.

(Turn over)

[4 marks]

continued on the next page . . .

Question 11 continued

11. (b) Inside one of the boxes is an old clock.

Gwilym takes the clock to be valued. It is valued at £56

The clock has decreased in value by 30% from last year.

Calculate how much the clock was worth last year.

[2 marks]

12. Look at the diagrams for Question 12 in the separate Diagram Booklet.

There are two diagrams, Diagram 1 and Diagram 2.

On 1st July every year, TREFOR estate agents record the time from when a phone rings to when it is answered.

The time taken to answer the phone is recorded in seconds.

TREFOR displays the data for their agents to see.

continued on the next page . . .

Question 12 continued

Diagram 1 displays the data for 1st July 2018.

Diagram 2 displays the data for 1st July 2019.

Use the diagrams to answer the following questions.

continued on the next page . . .

Question 12 continued

12. (a) What is the range of times taken to answer the phone for 1st July 2018?

Circle your answer.

100 seconds	80 seconds
60 seconds	110 seconds
105 seconds	

[1 mark]

Question 12 continued

12. (b) What is the maximum possible range of times taken to answer the phone for 1st July 2019?

Circle your answer.

90 seconds	110 seconds
80 seconds	60 seconds
85 seconds	

[1 mark]

Question 12 continued

12. (c) The manager of TREFOR estate agents claims that there has been an improvement in the median time taken to answer the phone from 1st July 2018 to 1st July 2019.

Is this true?

Yes ☐ **No** ☐

You must show all your working.

[2 marks]

continued on the next page . . .

Question 12 continued

12. (d) Complete the following statements.

(i) ‘On 1st July 2018, 75% of the phone calls were answered within _____ seconds.’

_____

_____

_____

_____

[1 mark]

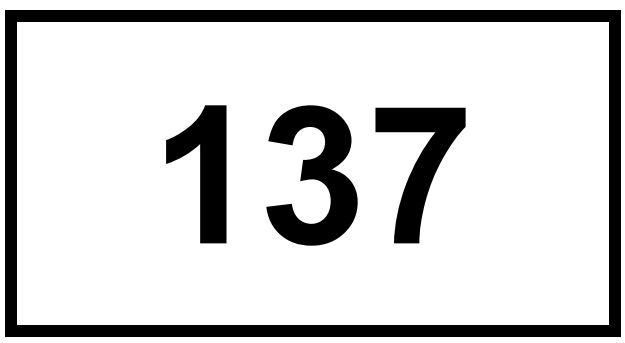
continued on the next page . . .

Question 12 (d) continued

12. (d) (ii) **'On 1st July 2019, 75% of the phone calls were answered within _____ seconds.'**

[2 marks]

13. Mr Aston lives at 137 Ffordd Uchel.
He is ordering some new signs for his house and for his gatepost from a website.
Look at the diagram below.
The diagram is NOT drawn to scale.



All the signs available on the website are MATHEMATICALLY SIMILAR.

continued on the next page . . .

Question 13 continued

He selects a rectangular sign for the front of his house.

It has a length of 42 cm and a height of 24 cm.

The digits 1, 3 and 7 on the sign are all 18 cm high.

The rectangular sign Mr Aston is considering for his gatepost has a height of 20 cm.

continued on the next page . . .

Question 13 continued

13. (a) Calculate the height of the digits 1, 3 and 7 on the sign Mr Aston is considering for his gatepost.

Height of the digits 1, 3 and 7 is

_____ cm [2 marks]

continued on the next page . . .

Question 13 continued

13. (b) Mr Aston's gatepost is 30 cm wide.

Will the sign he is considering fit his gatepost?

Yes ☐ **No** ☐

You must show all your working and give a reason for your answer.

(Turn over)

[3 marks]

END OF PAPER

TOTAL 80 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

INTERMEDIATE TIER

TUESDAY, 5 NOVEMBER 2019 – MORNING

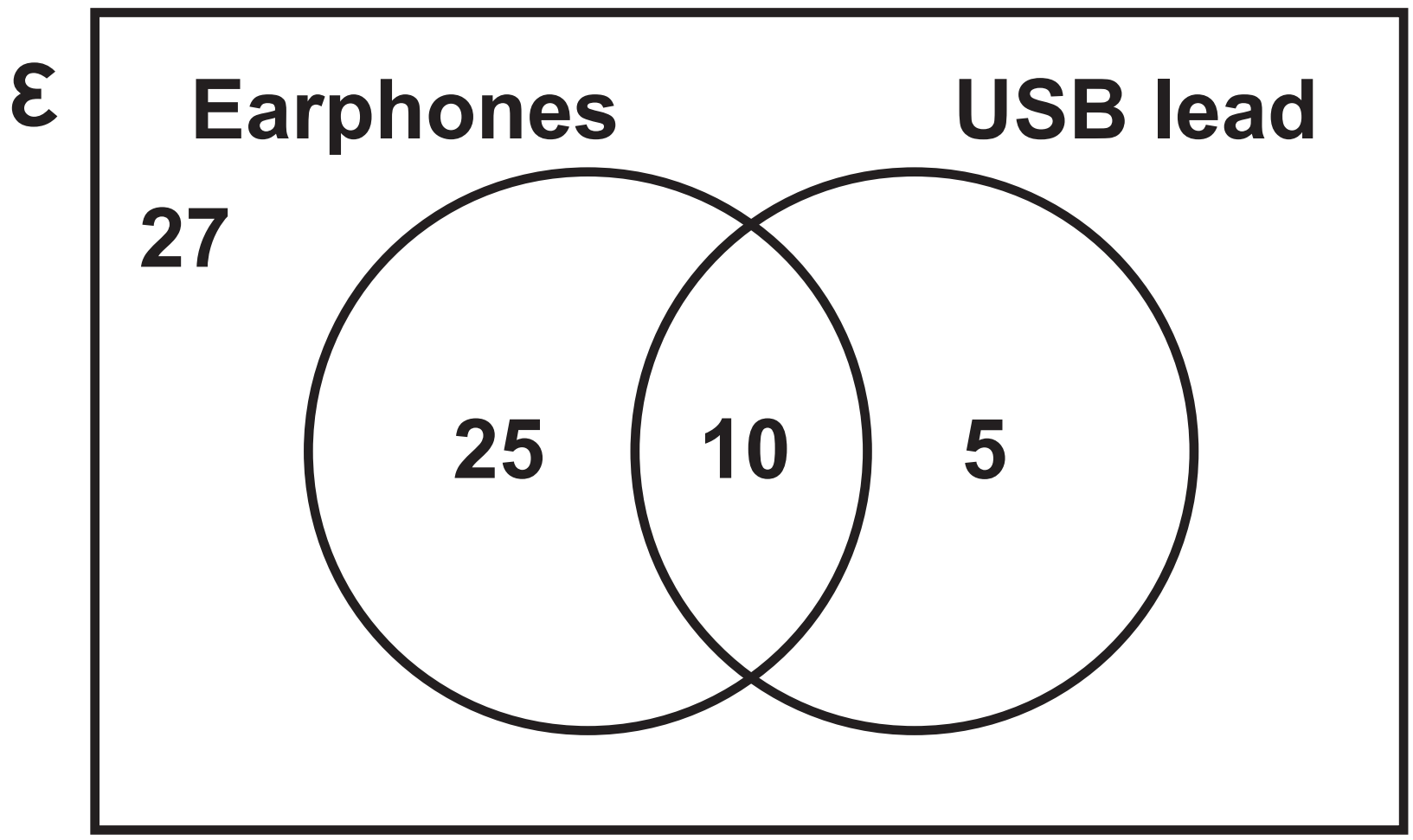
Diagram Booklet

Surname:	
First name(s):	
Centre Number:	
Candidate Number:	**0**

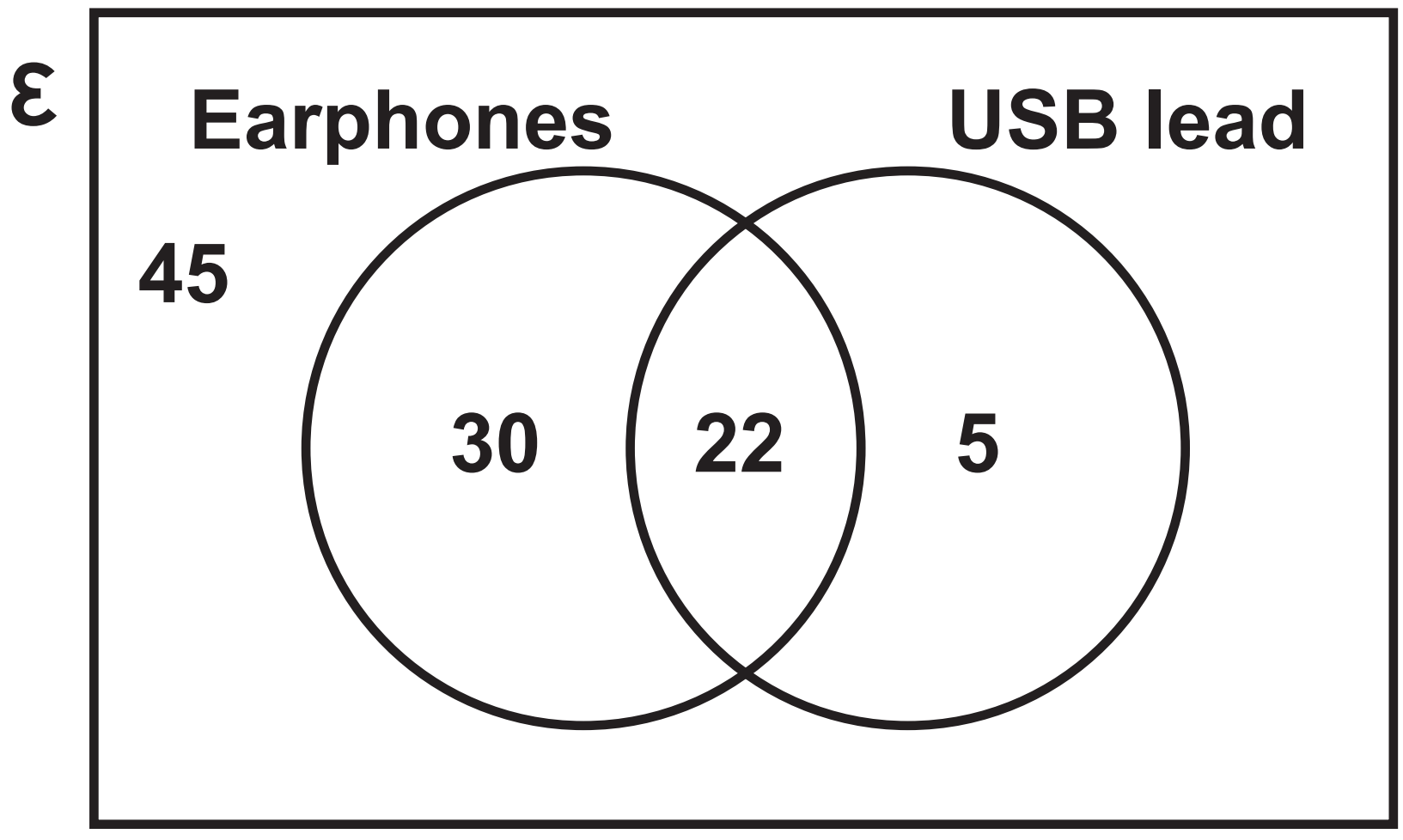
Question 2

Venn diagrams

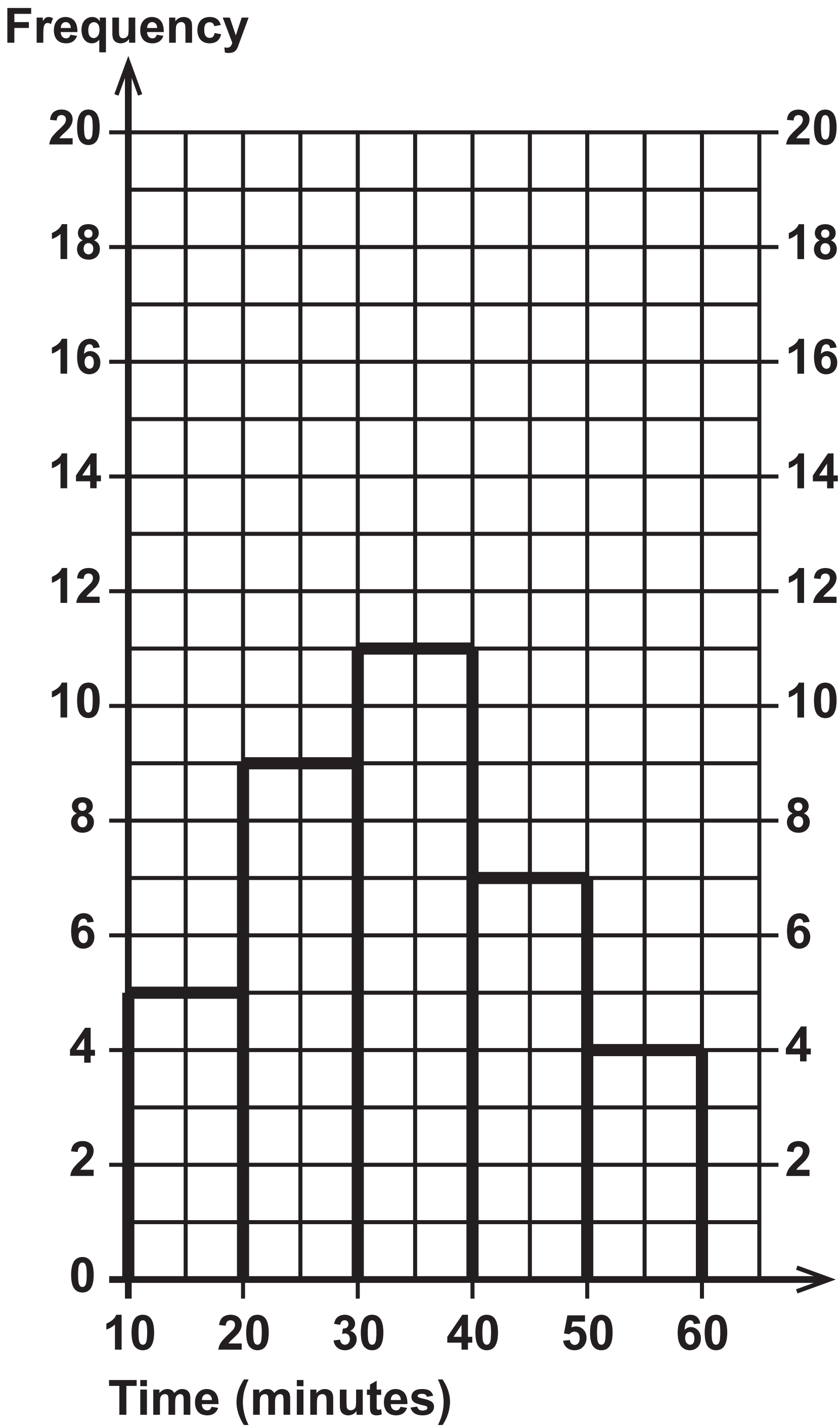
FRIDAY



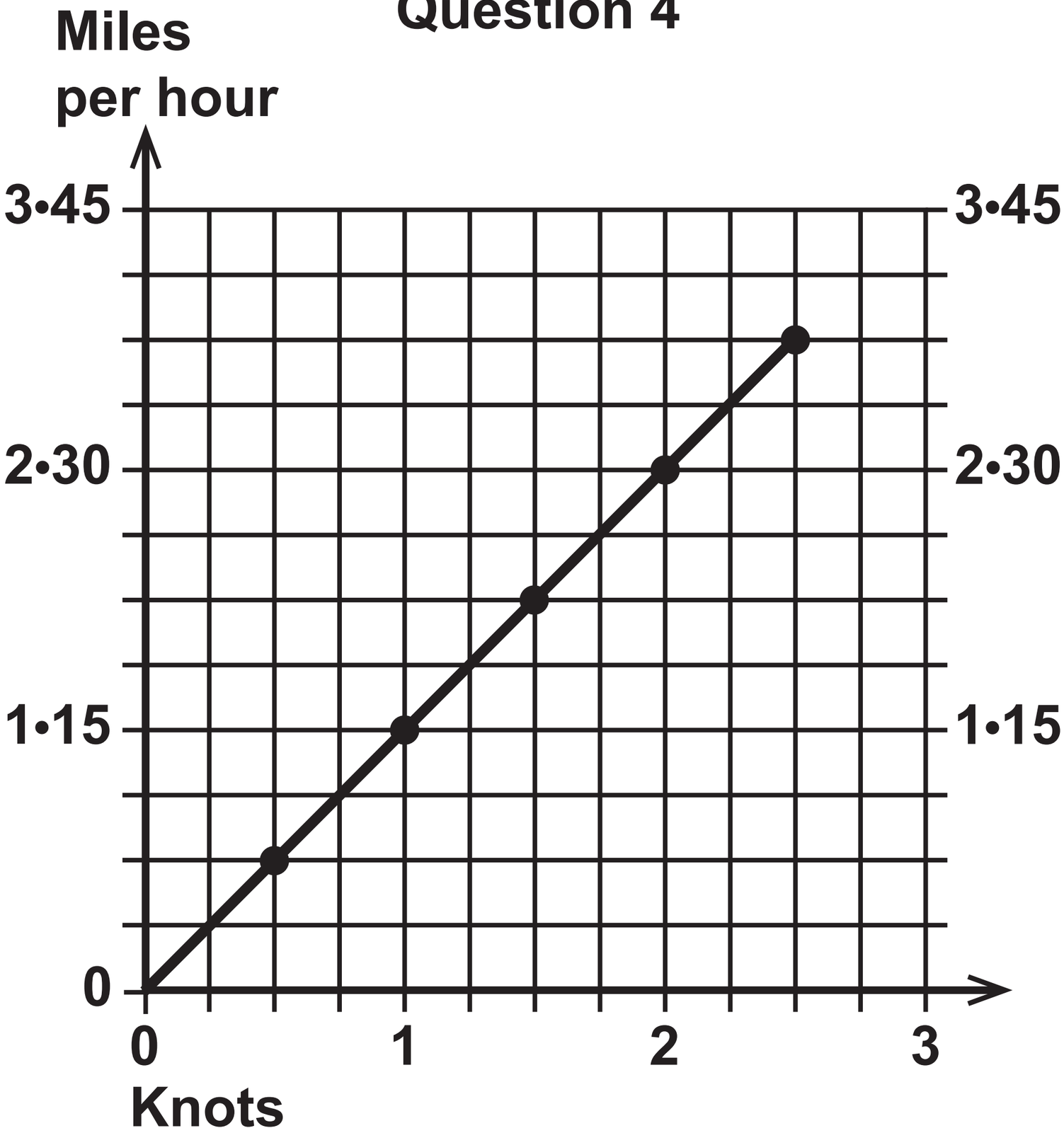
SATURDAY



Question 3



Question 4



Question 5

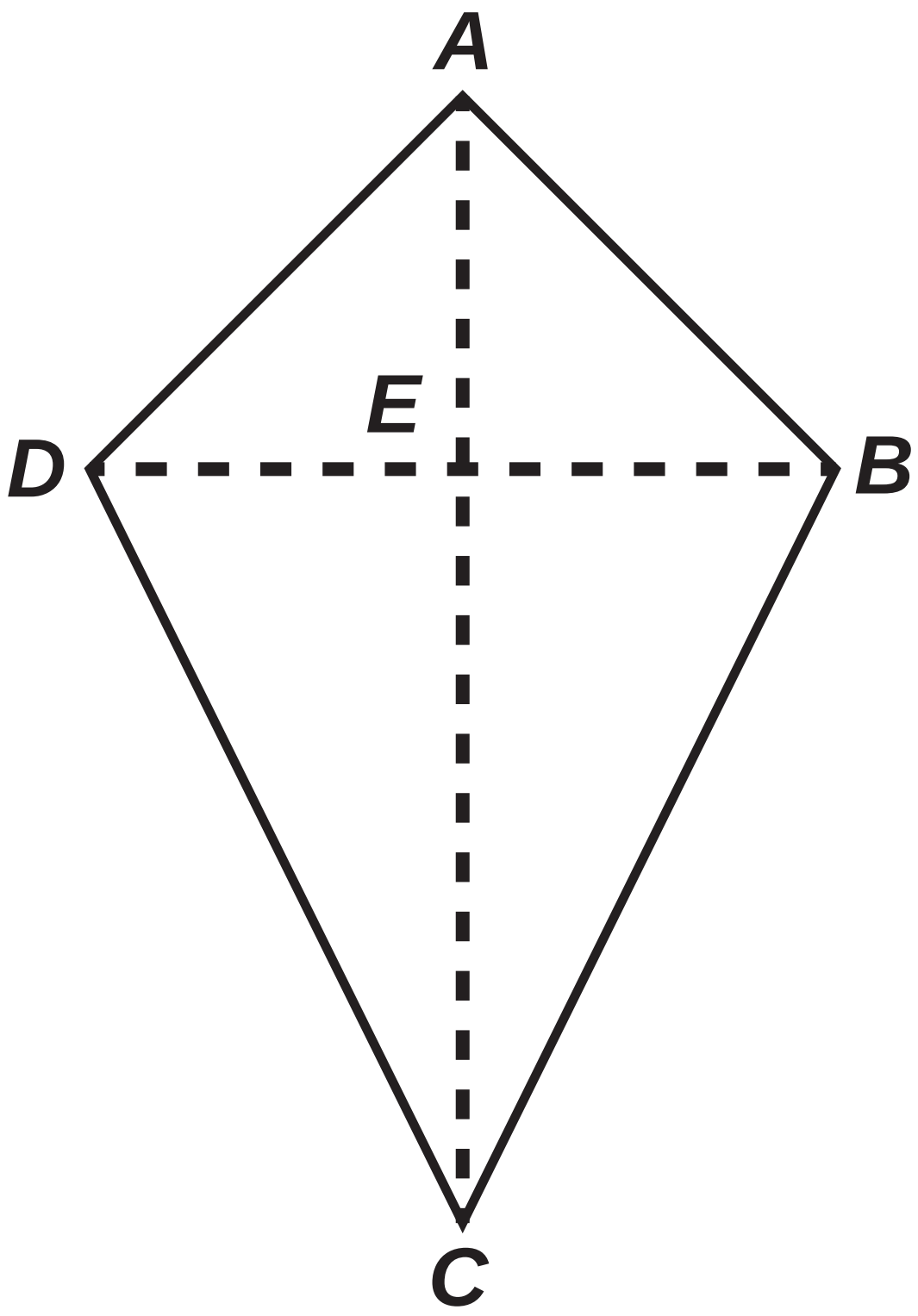
Information

WATER CHARGES

- The waste water output is calculated as 80% of the fresh water usage.
- Fresh water usage costs £1.10 per m^3
- Waste water output costs £1.50 per m^3

Question 8

Diagram NOT drawn to scale



Question 8 (b)

Table

Area of the kite, A	Best length for the tail
$A < 500\ \text{cm}^2$	2 m
$500\ \text{cm}^2 \leq A < 900\ \text{cm}^2$	2·4 m
$900\ \text{cm}^2 \leq A < 1200\ \text{cm}^2$	3·1 m
$1200\ \text{cm}^2 \leq A$	3·5 m

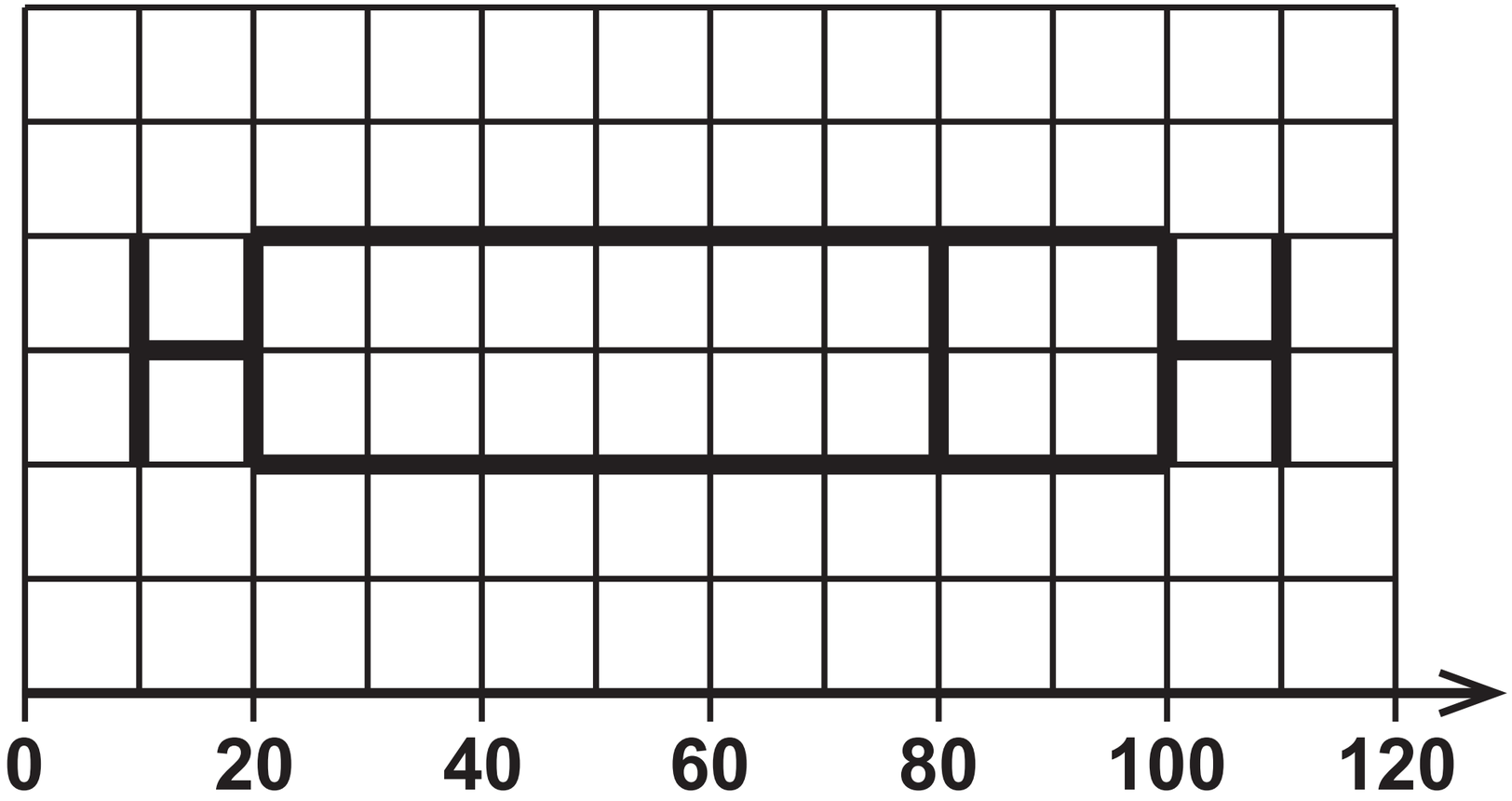
Question 10

Table

BAND	TAXABLE INCOME	TAX RATE
Personal allowance	Up to 200 000 pesos	0%
Standard rate	200 000 pesos to 500 000 pesos	10%
Further rate	Over 500 000 pesos	35%

Question 12

Diagram 1

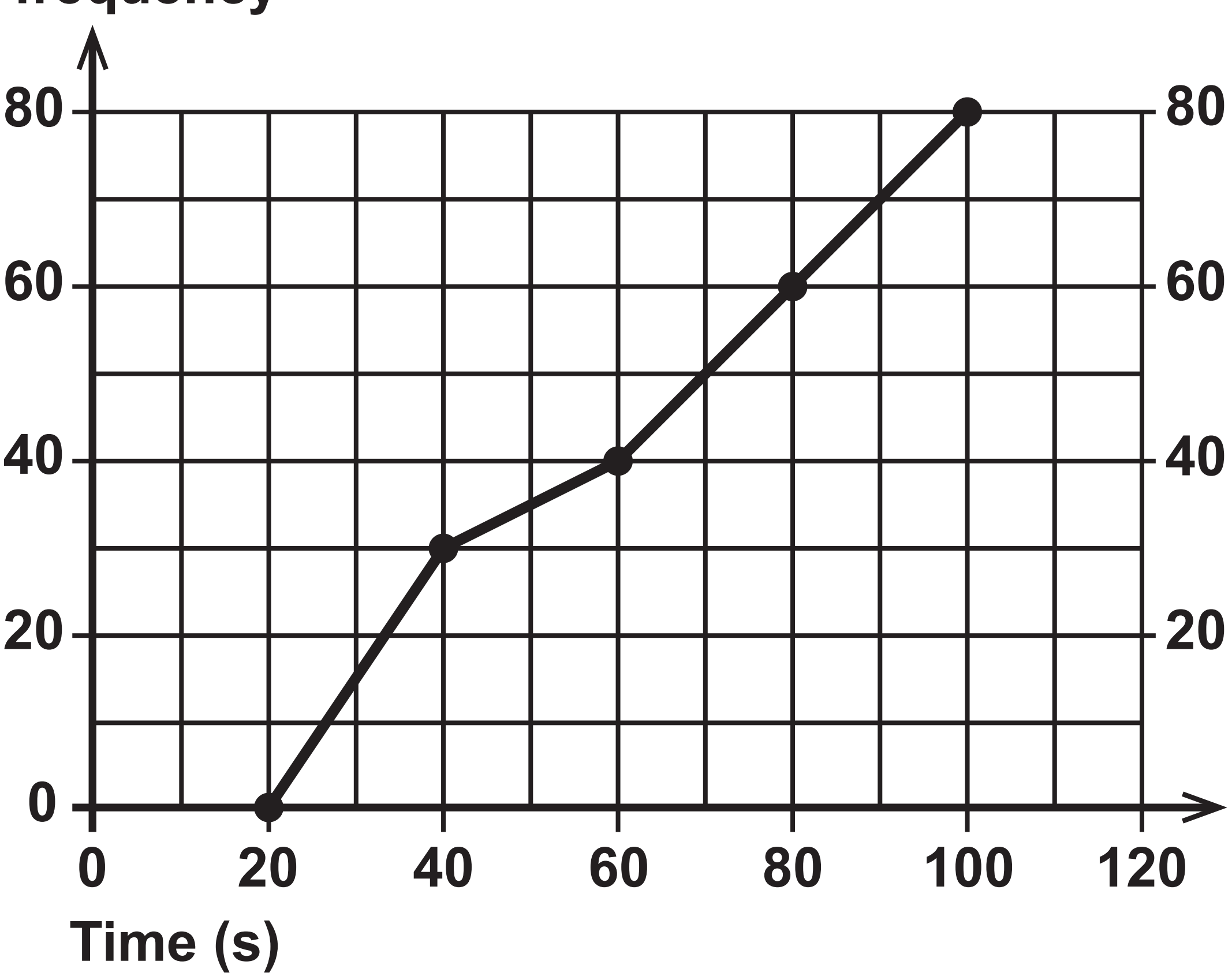


Question 12

Diagram 2

1st July 2019

Time taken to answer the phone in seconds



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3310U30-1

MATHEMATICS – NUMERACY

UNIT 1: NON – CALCULATOR

INTERMEDIATE TIER

TUESDAY, 5 NOVEMBER 2019 – MORNING

Spare Diagram Booklet

Surname:	
First name(s):	
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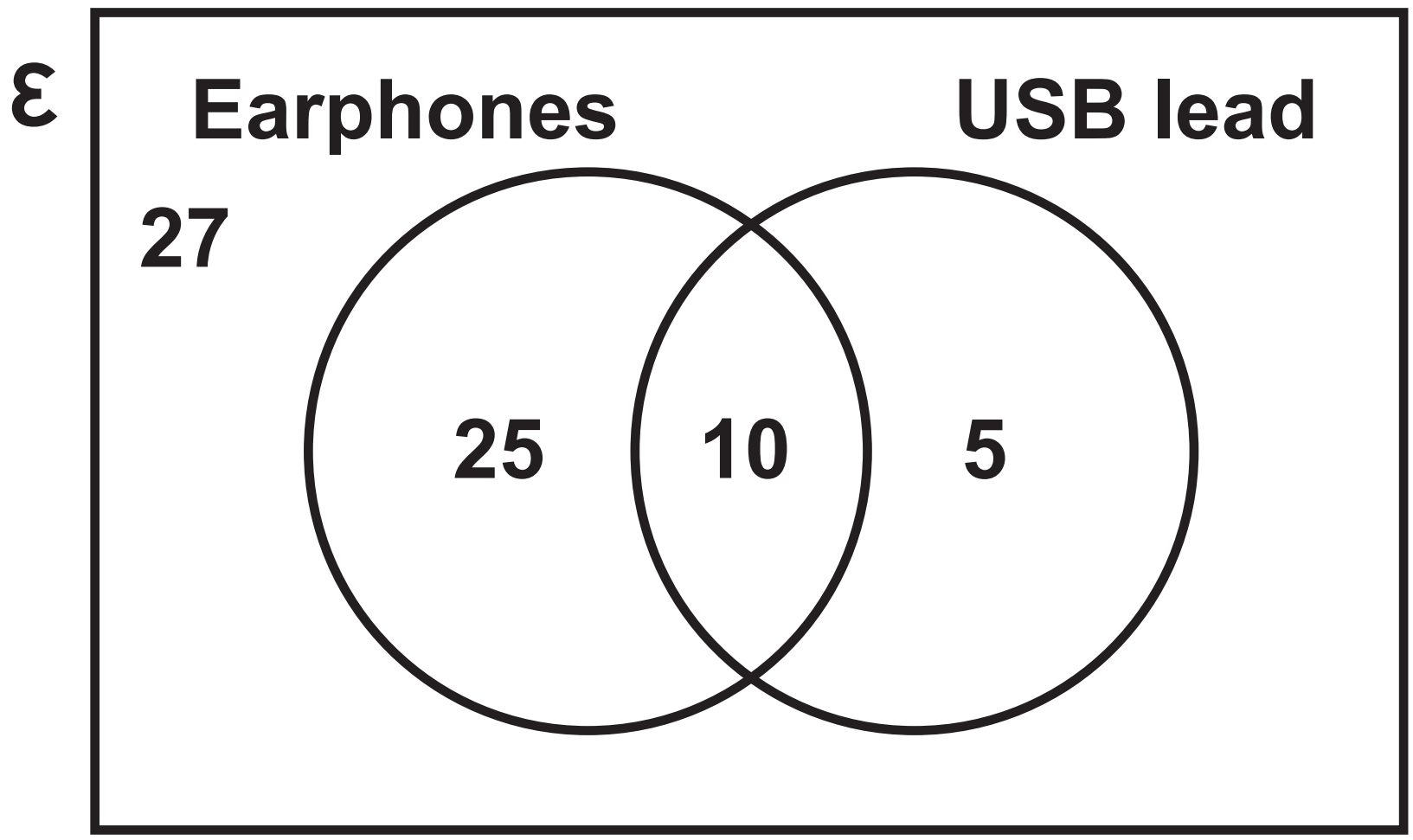
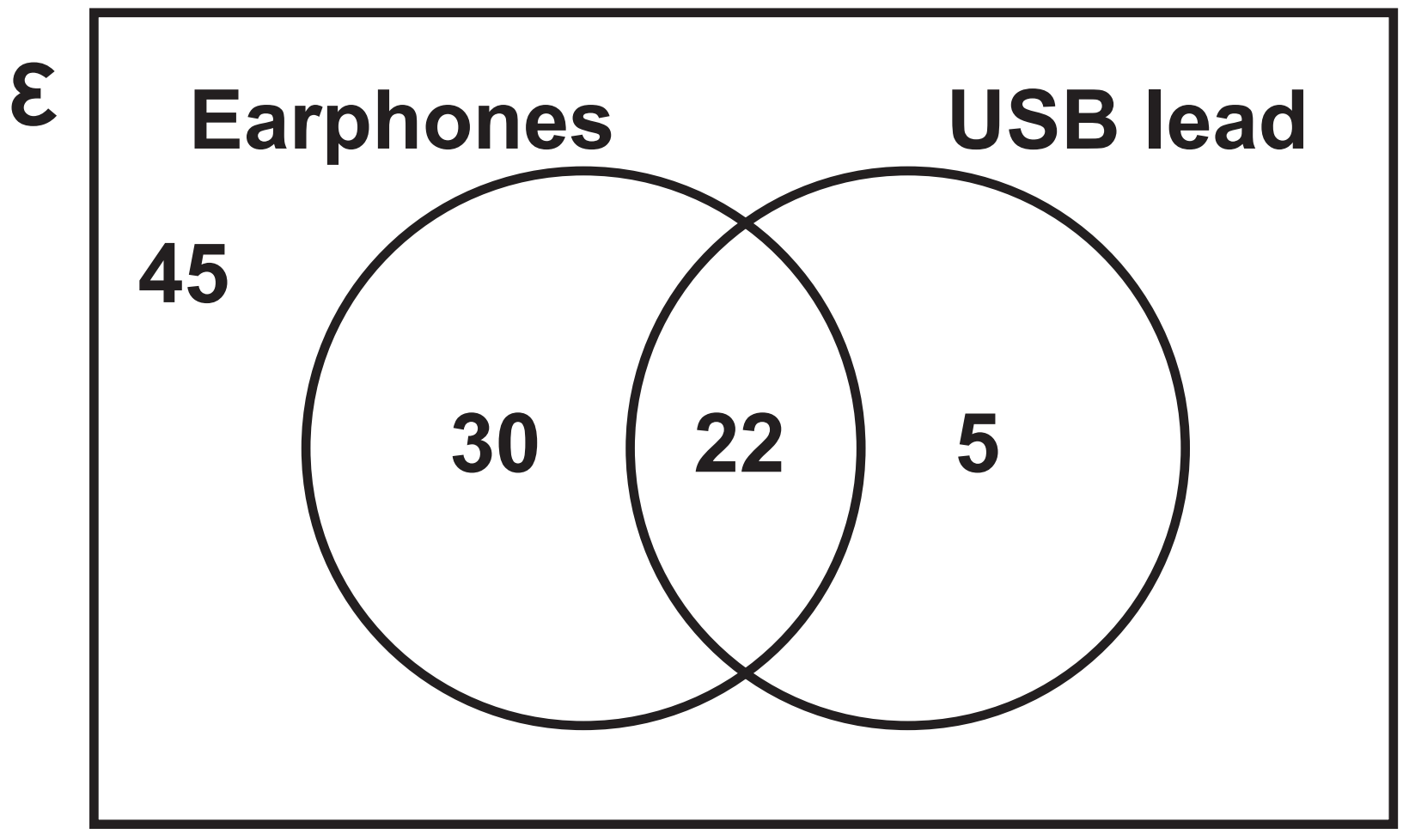
Question 2

Venn diagrams

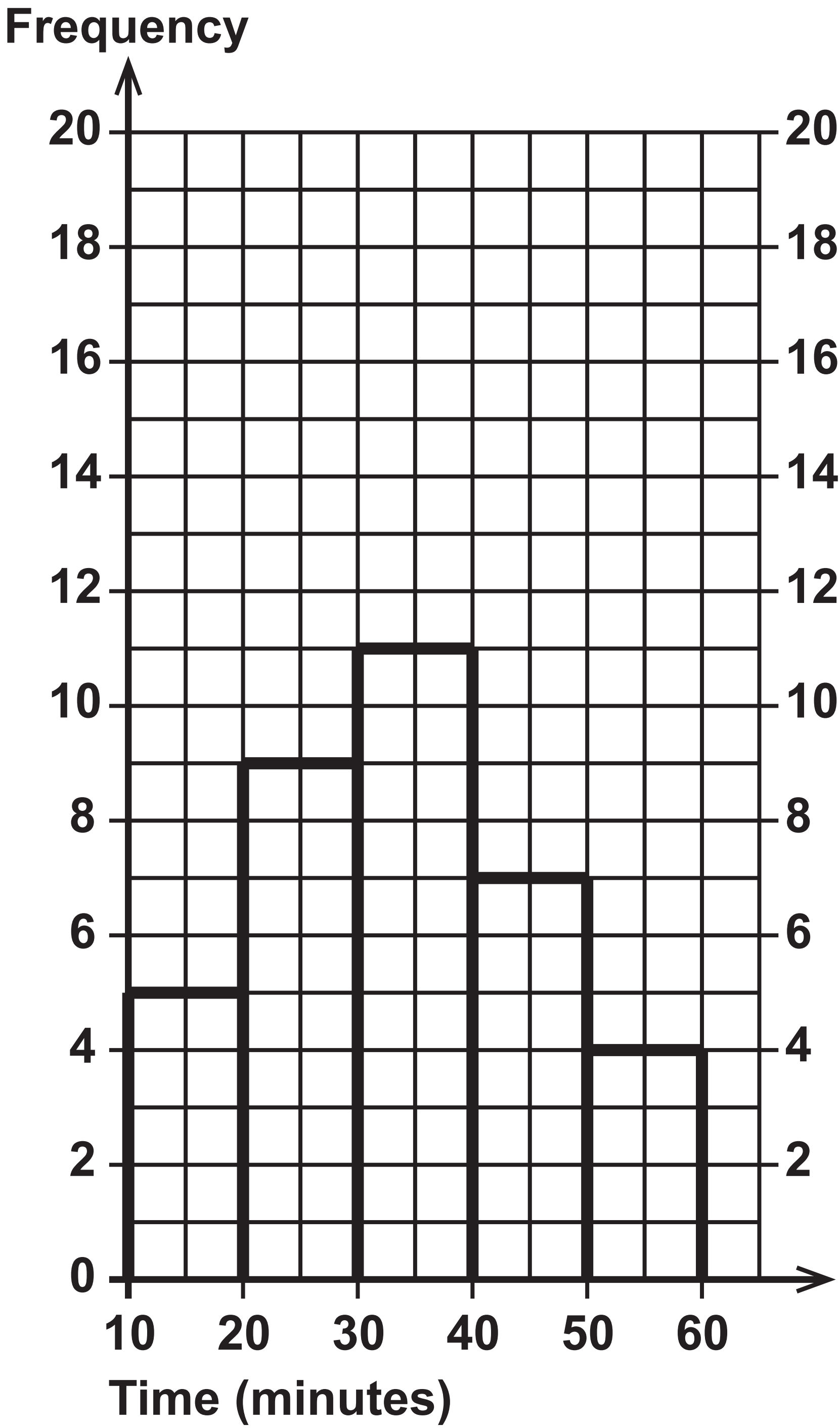
FRIDAY



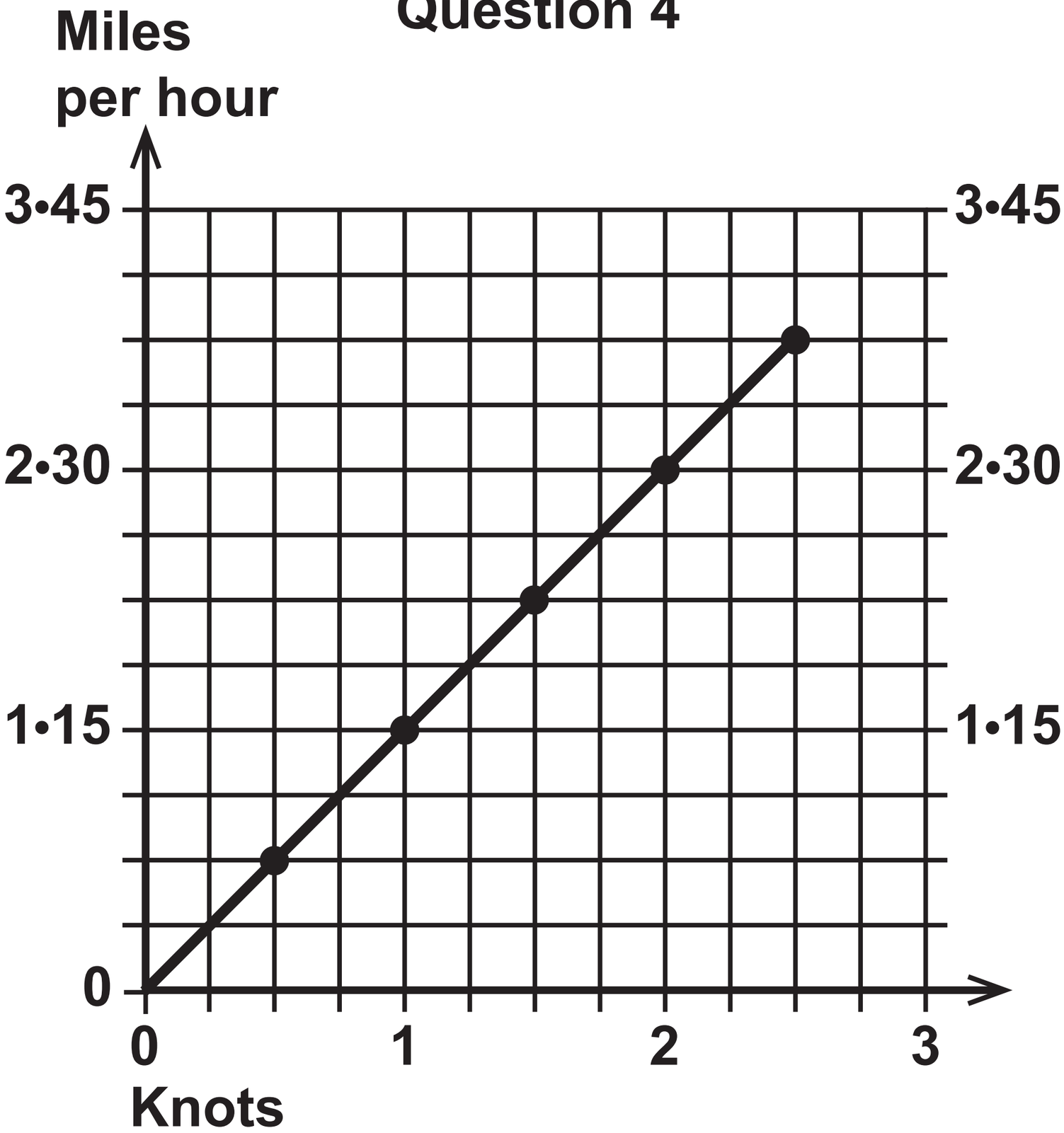
SATURDAY



Question 3



Question 4



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Question 8

Diagram NOT drawn to scale

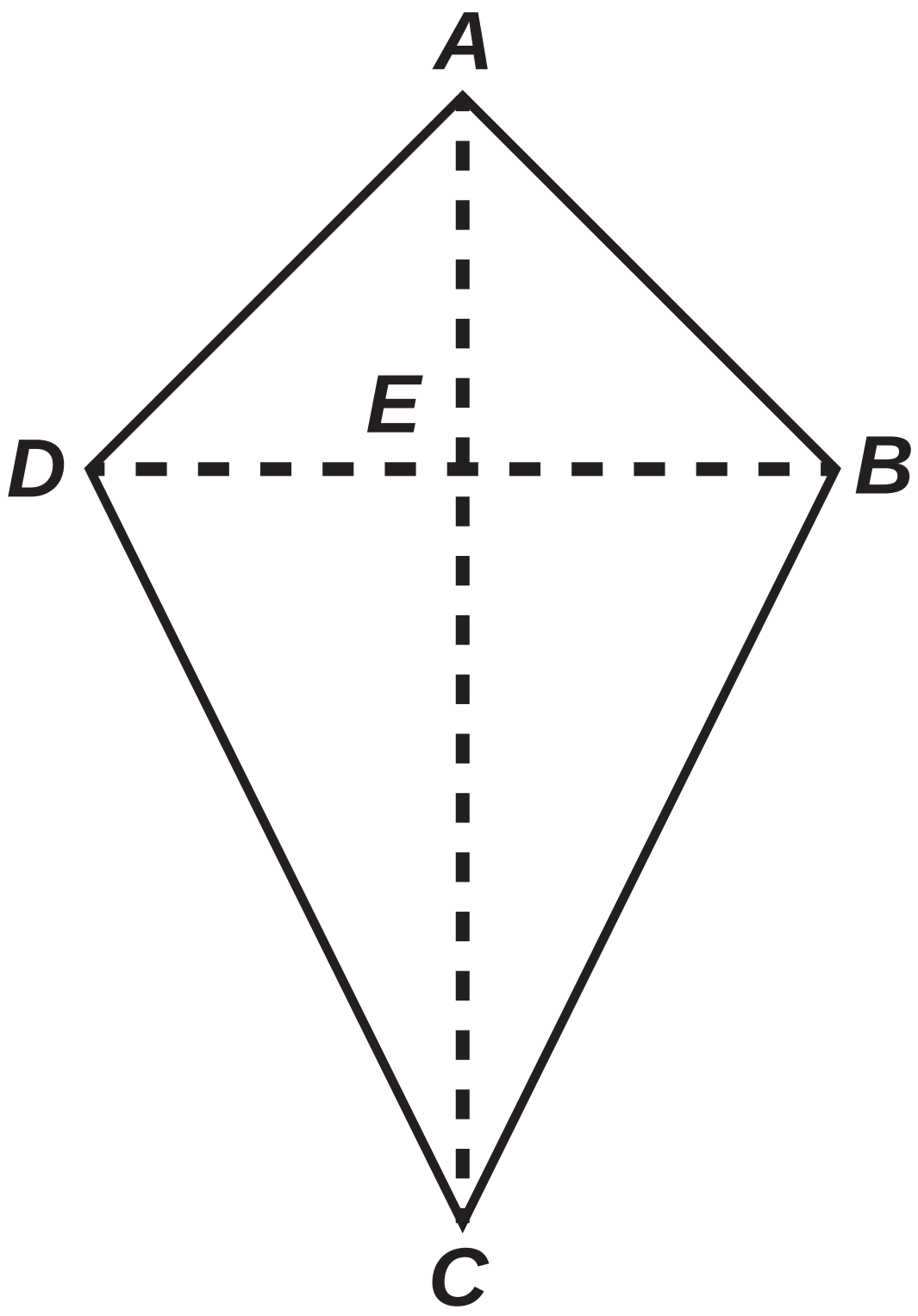

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Diagram 1

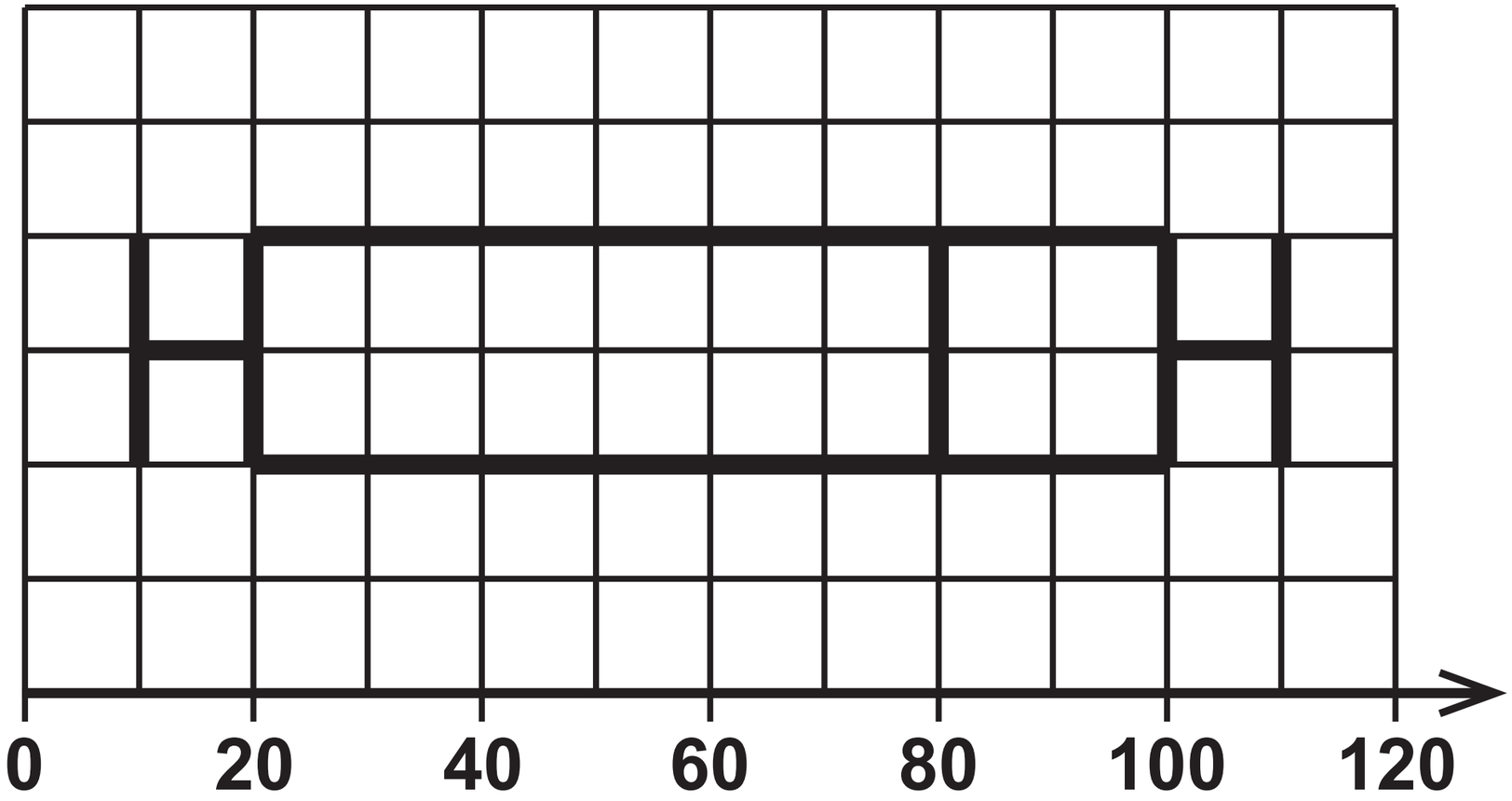

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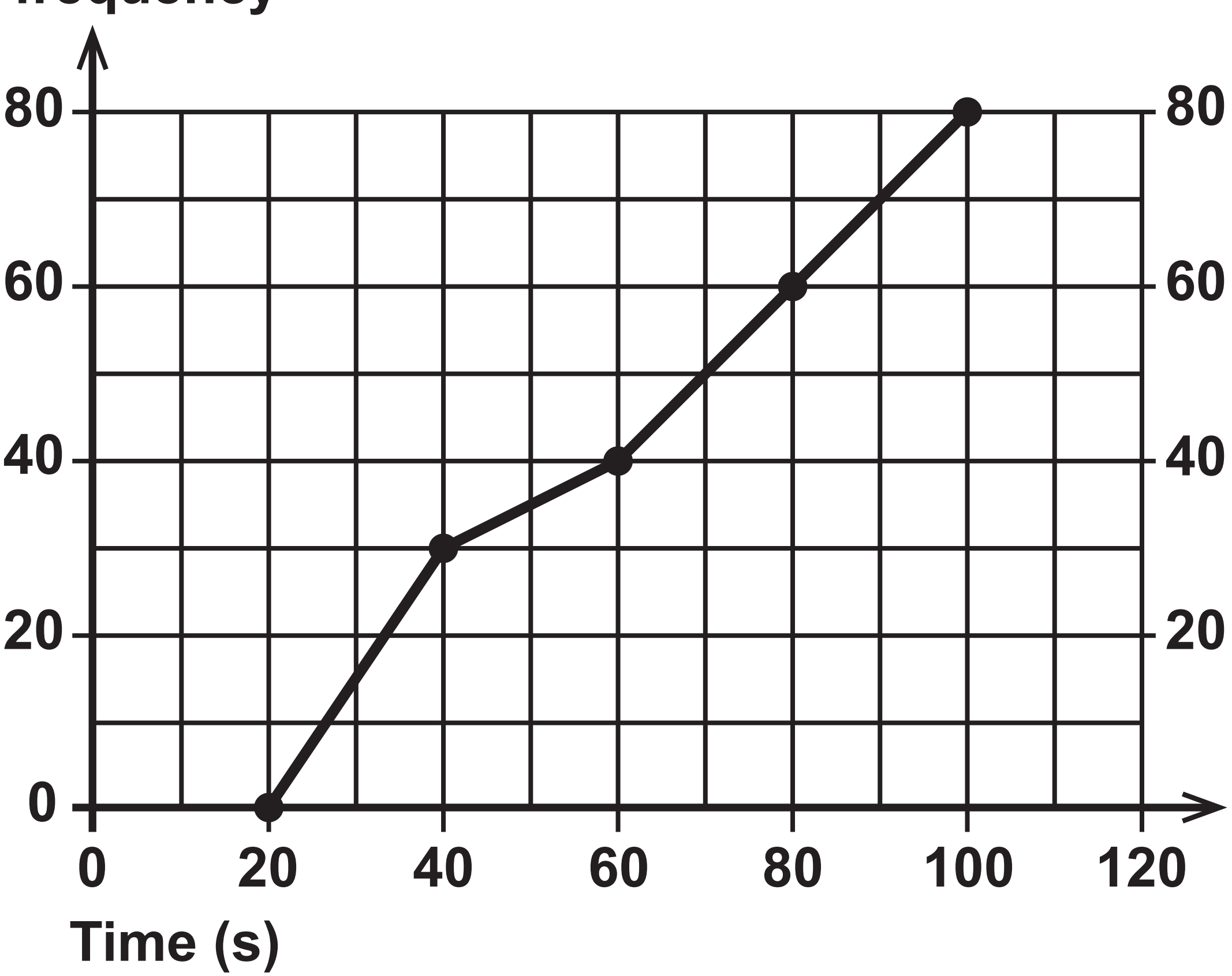
Diagram 2

1st July 2019

Time taken to answer the phone in seconds



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MATHEMATICS
and
NUMERACY

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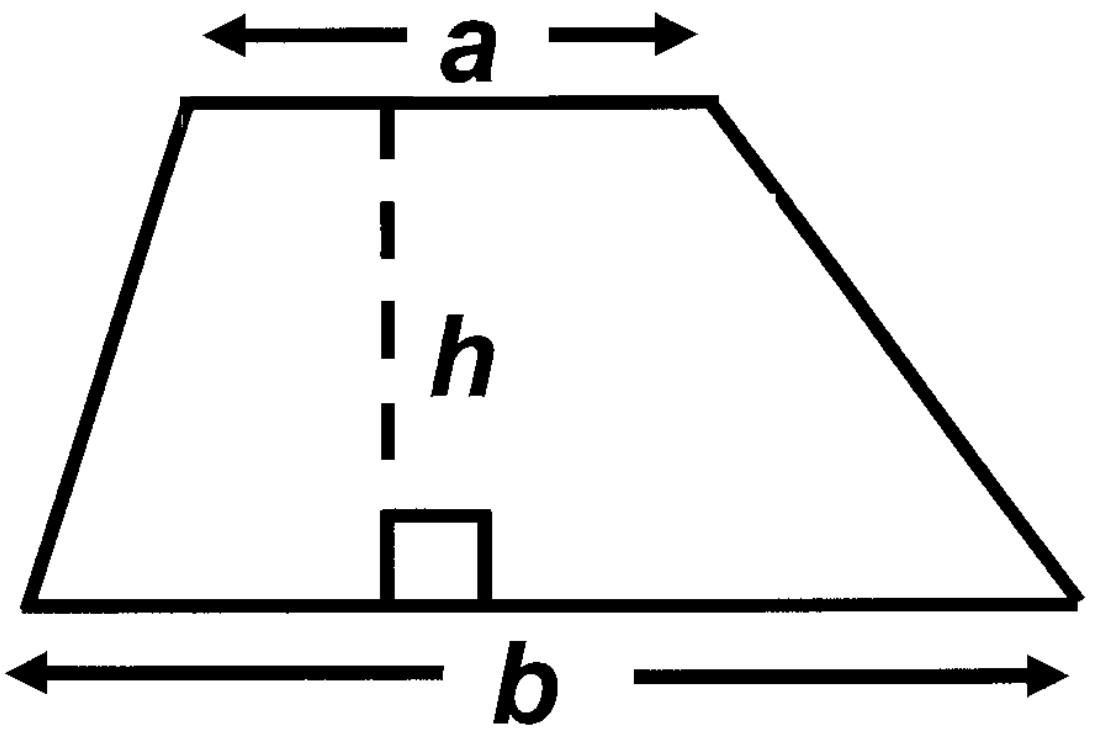
FORMULA LIST
INTERMEDIATE TIER
GCSE

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 × length