GCSE

3310U20–1

MONDAY, 3 JUNE 2024 – MORNING

MATHEMATICS – NUMERACY

UNIT 2: CALCULATOR – ALLOWED

FOUNDATION TIER

1 hour 30 minutes plus your additional time allowance

A CALCULATOR WILL BE REQUIRED FOR THIS PAPER

Surname: _____

First name(s): _____

Centre Number: _____

Candidate Number: 0 _____

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

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.

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 or use the π button on your calculator.

(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. Morgan wants to buy the following items from a shop.

Shopping List	
Cereal	£2.70
Bananas	99p
Milk	£1.30
Eggs	£1.95
Coffee	£7.49

continued on the next page . . .

Question 1 continued

1. (a) Morgan uses a calculator to find the total cost of the items.

He thinks the total is £112.44

What mistake has Morgan made?

[1 mark]

continued on the next page . . .

Question 1 continued

1. (b) Morgan pays for all the items with a £20 note.

How much change will he get?

[2 marks]

2. Gwersyll yr Urdd Glan–llyn is an outdoor activity centre in North Wales.

Some Year 8 pupils from a school are going to Glan–llyn on a trip.

Look at the diagram for Question 2 in the separate Diagram Booklet.

The diagram is a pictogram.

The pictogram shows how many pupils from each tutor group are going on the trip.

The key for this pictogram is incomplete.

continued on the next page . . .

Question 2 continued

2. (a) 24 pupils from 8N are going on the trip.

(i) Complete the key for the pictogram in the Diagram Booklet.

[2 marks]

continued on the next page . . .

Question 2 (a) continued

2. (a) (ii) How many pupils from 8T are going on the trip?

[1 mark]

continued on the next page . . .

Question 2 continued

2. (b) There are 110 pupils and 11 teachers going to Glan – llyn. They will all travel by bus. Each bus has 37 seats for passengers.

Find the least number of buses needed.

The least number of buses needed

= _____

[3 marks]

continued on the next page . . .

Question 2 continued

2. (c) (i) All 24 PUPILS from 8N chose an afternoon activity.

A teacher recorded how many pupils chose each activity.

He has the following 3 notes:

4 pupils chose high ropes.

This tally shows the number of pupils who chose climbing.

The number of pupils who chose bowling was half of the number of pupils who chose climbing.

continued on the next page . . .

Question 2 (c) (i) continued

Look at the table for Question 2 (c) (i) in the separate Diagram Booklet.

Complete the missing information in the table.

[3 marks]

continued on the next page . . .

Question 2 (c) continued

2. (c) (ii) One pupil is selected at random from 8N.

Which of the expressions below best describes the chance that this pupil chose the high ropes?

Circle your answer.

impossible
unlikely
even chance
likely
certain

[1 mark]

3. Sianel 6 is a television channel. Sianel 6 needs to fit the following programmes between three News programmes.

NAME OF PROGRAMME	LENGTH OF PROGRAMME
The Football Show	40 minutes
Baking Fun	50 minutes
Cartoon Time	25 minutes
Politics Cymru	20 minutes

continued on the next page . . .

Question 3 continued

For each News programme, the title shows how long the programme lasts. For example, the 10–minute News lasts for 10 minutes.

Look at the timetable for Question 3 in the separate Diagram Booklet. Complete the timetable, showing where the programmes can fit, along with their start times.

[4 marks]

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

Mari is buying a new mobile phone.

She sees two deals for the same phone, as shown below.

DEAL A	DEAL B
PAY £19.99 NOW and then £28.99 a month for 24 months	PAY £100 NOW and then £24.36 a month for 24 months

continued on the next page . . .

Question 4 (a) continued

Which deal is the cheaper for Mari over 24 months?

How much cheaper is this deal?

You must show all your working.

(Turn over)

[5 marks + 2 marks OCW]

continued on the next page . . .

Question 4 continued

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

The diagram shows the screen size of a mobile phone, given as the length of the diagonal of the screen.

Mari is trying to find the screen size of the new phone.

This phone has a rectangular screen with height 12•5 cm and width 6•5 cm.

continued on the next page . . .

Question 4 (b) continued

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

Mari has started to draw an accurate diagram as shown in the Diagram Booklet.

She has drawn a line for the width of the phone.

Complete the diagram to find the screen size.

Give your answer in cm, correct to 1 decimal place.

continued on the next page . . .

Question 4 (b) continued

Screen size of the new phone (correct to 1 decimal place)

= _____ cm

[3 marks]

5. Look at the diagram for Question 5 in the separate Diagram Booklet.

The diagram is NOT drawn to scale.

Geraint needs to put a fence along one edge of his garden.

He decides to make his fence using posts and panels, as shown in the diagram.

Each post has a width of 7 cm.

Each panel has a length of 180 cm.

continued on the next page . . .

Question 5 continued

Geraint's fence will have 6 POSTS.

Calculate the total length of Geraint's fence.

Give your answer in centimetres.

(Turn over)

Total length = _____ cm

[4 marks]

6. Shiona is saving to pay for a holiday.

She has 13 weeks to save £510 to pay for her holiday.

Shiona already has savings of £95

In the first week, she knows she can save £70

She plans to save equal amounts of money in each of the remaining weeks.

How much does Shiona need to save in each of the remaining weeks so that she can pay for her holiday?

You must show all your working.

(Turn over)

(Turn over)

[4 marks]

7. Idris flies from Cardiff to Faro, in Portugal.

(a) The actual flying time is 133 minutes.

The plane flies at an average speed of 8 miles per minute.

(i) Calculate the flying distance between Cardiff and Faro.

Give your answer in miles.

[2 marks]

continued on the next page . . .

Question 7 (a) continued

7. (a) (ii) Calculate the plane's average speed in MILES PER HOUR.

[2 marks]

continued on the next page . . .

Question 7 continued

7. (b) Idris takes a cabin bag on board his flight.

His bag measures

55 cm by 40 cm by 23 cm.

The label on his cabin bag says,

> **Bag capacity is greater than 48 litres.**

Is this label correct?

Yes ☐ **No** ☐

continued on the next page . . .

Question 7 (b) continued

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

[3 marks]

continued on the next page . . .

Question 7 continued

7. (c) Idris looks out of the aeroplane window.

He notices a village below.

Idris takes a photograph of the village to try to work out where he is.

From the photograph, he draws a sketch including some parallel streets.

continued on the next page . . .

Question 7 (c) continued

Look at the diagram for Question 7 (c) in the separate Diagram Booklet.

The diagram is NOT drawn to scale.

The diagram shows his sketch.

continued on the next page . . .

Question 7 (c) continued

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

w = _____ °

x = _____ °

y = _____ °

z = _____ °

[4 marks]

8. Look at the information provided for Question 8 in the separate Diagram Booklet.

Gracie decides to buy a new ZX31 camera.

On the internet, she sees advertisements for the camera she wants.

Gracie knows that the exchange rate is £1 = $1.25

She wants to buy the ZX31 camera that is the best value for money.

continued on the next page . . .

Question 8 continued

Which of the advertisements offers the best option for Gracie?

You must show all your working.

(Turn over)

[5 marks]

9. During the 30 days in the month of September, Andras used 138 m^3 of gas.
The cost of this gas was 12p per kWh.

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

The standing charge was 32p per day.
VAT at 5% was payable on the sum of the cost of the gas used and the standing charge.

continued on the next page . . .

Question 9 continued

Calculate Andras's gas bill

for September.

You must show all your working.

(Turn over)

[7 marks]

10. The Severn Bridge was built in 1966 to allow vehicles to travel between England and Wales.

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

The diagram represents the Severn Bridge.

The bridge has a width of 23 m and a total length of 1600 m.

The section of the bridge between the two towers is 988 m long.

The tarmac road surface is 0•035 m thick.

continued on the next page . . .

Question 10 continued

The cables from the towers to support the road are made from 18 000 miles of wire.

(a) What fraction of the total length of the bridge is the section between the two towers? Give your fraction in its simplest form.

[2 marks]

continued on the next page . . .

Question 10 continued

10. (b) Calculate the length of the wire used to make the cables in KILOMETRES.

[2 marks]

continued on the next page . . .

Question 10 continued

10. (c) The cost of tarmac is £250 per m^3

Calculate the cost of the volume of tarmac needed to resurface the total length of the Severn Bridge.

[3 marks]

END OF PAPER

TOTAL 65 MARKS

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

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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 2

Key : ☺ **represents _____ pupils**

8L	☺	☺	☺	☺	☺		
8M	☺	☺	☺	◔			
8N	☺	☺	☺	☺	☺	☺	
8P	☺	☺	☺	☺	◔		
8R	☺	☺	☺	☺	☺		
8T	☺	☺	☺	◕			

Question 2 (c) (i)

ACTIVITY	NUMBER OF PUPILS
Climbing	
High ropes	
Bowling	
Sailing	

Question 3

Time table

START TIME	NAME OF PROGRAMME
5:00 p.m.	30 – minute News
5:30 p.m.	
6:30 p.m.	15 – minute News
8:00 p.m.	10 – minute News

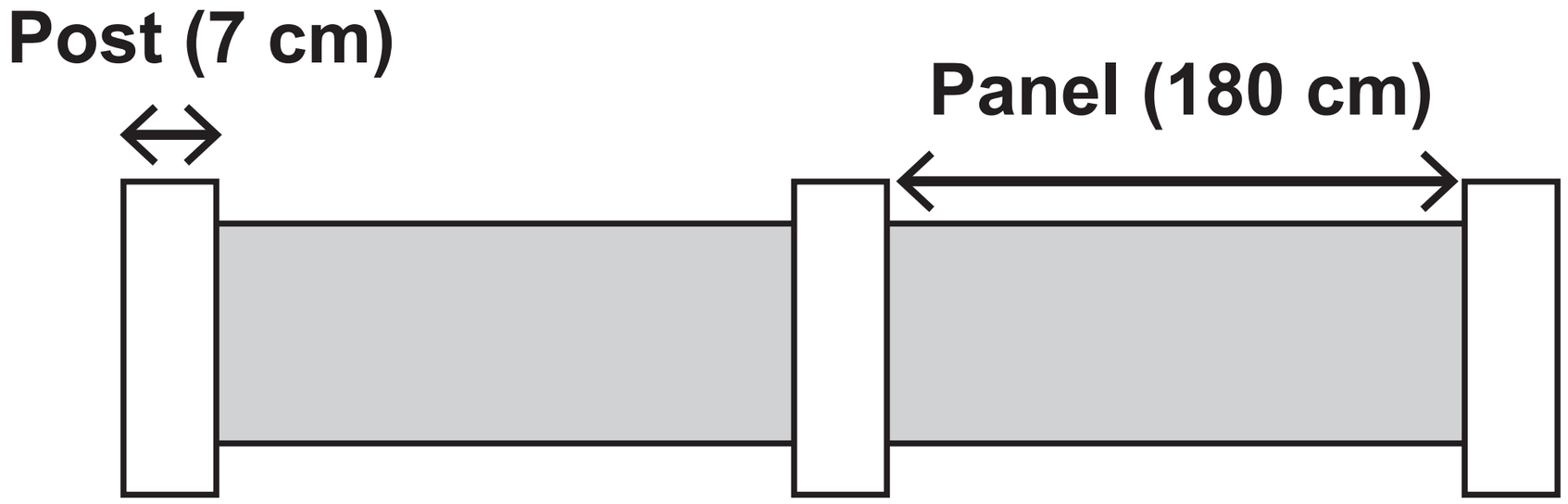
Question 4 (b)

Diagram NOT drawn to scale

Width 6•5 cm

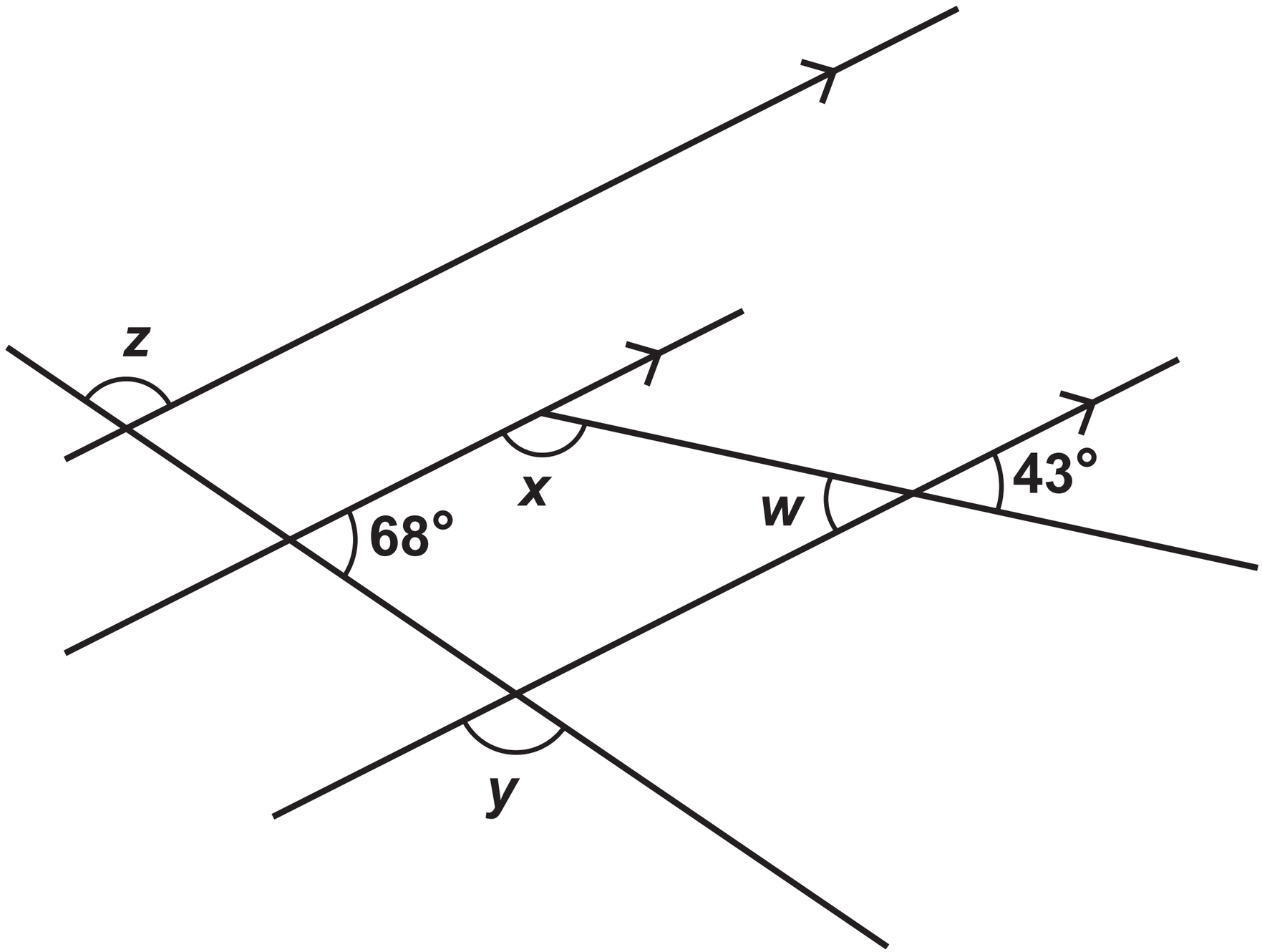
Question 5

Diagram NOT drawn to scale



Question 7 (c)

Diagram NOT drawn to scale



Question 8

Information

CAMERA FOX	US CAMERA GEEK	SURE CAMERA
ZX31 camera £62.95 + £3.90 delivery	ZX31 camera $81.20 with FREE international delivery	ZX31 camera special offer. Usual price £75 NOW 14% discount AND free delivery

Question 9

Formula

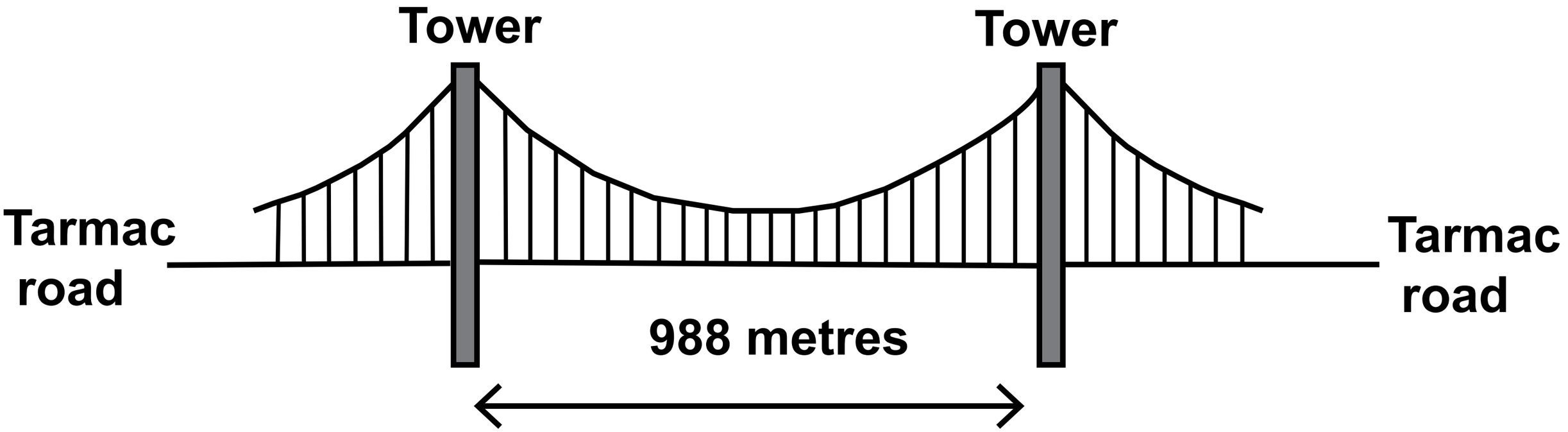
The formula used to calculate the number of kWh for the gas used is as follows:

Number of kWh =

number of m^3 of gas × 39•5 × 1•02264 ÷ 3•6

Question 10

Diagram NOT drawn to scale



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