GCSE

3310U40-1

WEDNESDAY, 7 JUNE 2023 – MORNING

MATHEMATICS – NUMERACY

UNIT 2: CALCULATOR – ALLOWED

INTERMEDIATE TIER

1 hour 45 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.	12	
3.	15	
4.	8	
5.	7	
6.	7	
7.	4	
8.	13	
9.	7	
10.	4	
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.

Model for Question 9.

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 $3{\cdot}14$ 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 3 (a), 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 diagram for Question 1 in the separate Diagram Booklet.
   The diagram is a conversion graph for Fahrenheit to Celsius.

   Owain has drawn this conversion graph to help him with his homework.

continued on the next page . . .

Question 1 continued

1. (a) Circle the correct answer to complete the following statement.

15°C in Fahrenheit is

–5°F	**59°F**	**58°F**	**55°F**	**66°F**

[1 mark]

continued on the next page . . .

Question 1 continued

1. (b) Bethan says,

“40°C in Fahrenheit is 136°F,
as it is twice what it is at 20°C”

Bethan is INCORRECT.

Express 40°C in Fahrenheit.

40°C is _____ °F

[2 marks]

2. Look at Table 1 and Table 2 for Question 2 in the separate Diagram Booklet.

In 2018, the costs of making phone calls from the UK to some overseas countries were as shown in the tables.

(a) (i) Calculate the cost of making a $2\frac{1}{4}$ hour phone call to a mobile in China.

Give your answer in pounds.

_____

_____

£ _____

[3 marks]

continued on the next page . . .

Question 2 (a) continued

2. (a) (ii) A one hour phone call cost £72

Was this call made to a landline or a mobile?

Was this call made to a country in Band A, Band B or Band C?

You MUST show all your working.

continued on the next page . . .

Question 2 (a) (ii) continued

Tick (✓) the TWO correct boxes.

Landline ☐ **Mobile** ☐

Band A ☐

Band B ☐

Band C ☐

[3 marks]

continued on the next page . . .

Question 2 continued

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

The table gives the exchange rates in September 2018.

(i) A phone call to Argentina costs £6

How much did this phone call cost in pesos?

_____

_____

_____

15

_____ pesos

[2 marks]

continued on the next page . . .

Question 2 (b) continued

2. (b) (ii) A phone call to a landline in Japan cost 2151.30 yen.

Calculate:

- **the cost of this phone call, in pounds,**
- **how long the phone call lasted, in minutes.**

_____

_____

Cost £ _____

Phone call lasted _____ minutes

[4 marks]

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

The Draig Afon youth choir went on tour.
48 people travelled and stayed in hotels.

continued on the next page . . .

Question 3 (a) continued

The organiser booked:

- **Gwesty Arwel for 3 nights**
- **Hotel Glan y Môr for 5 nights.**

Look at the table for Question 3 (a) in the separate Diagram Booklet.

The table gives the prices per night for the two hotels.

The Draig Afon youth choir qualified for the group booking offer.

continued on the next page . . .

Question 3 (a) continued

12 of these people required single rooms.

The other 36 people were booked into twin rooms.

Calculate the total cost of the 8 – night stay for the choir.

You must show all your working.

(Turn over)

(Turn over)

[8 marks + 2 marks OCW]

continued on the next page . . .

Question 3 continued

3. (b) The Draig Afon youth choir hired a coach.

At the start of the tour, the coach's display showed it had travelled 32 474 km.

At the end of the tour, the coach's display showed 33 860 km.

The fuel for the coach cost £1.86 per litre.

On average, the coach used 1 litre of fuel for every 4 km travelled.

continued on the next page . . .

Question 3 (b) continued

Calculate the total cost of the fuel used for the choir's tour.

[5 marks]

(Turn over)

4. (a) Llandudno Pier is 700 m long.

What is the length of Llandudno Pier in feet?

You must use the following conversions.

12 inches = 1 foot
1 inch ≈ 2·5 cm

[3 marks]

continued on the next page . . .

Question 4 continued

4. (b) Southend Pier is the longest pleasure pier in the world.
It is 1·34 miles long.

Gareth walks at a steady pace along Southend Pier.
He walks 84 metres every minute.
He starts walking along the length of the pier at 2 p.m.

continued on the next page . . .

Question 4 (b) continued

At what time does Gareth reach the end of the pier?

Give your time correct to the nearest minute.

You must show all your working.

(Turn over)

Gareth reaches the end of the pier at _____ , correct to the nearest minute.

[5 marks]

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

The times it took a group of girls and a group of boys to complete the same puzzle are shown in the frequency diagrams.

continued on the next page . . .

Question 5 continued

5. (a) Anand says,

“There are more boys than girls in these groups.”

By showing all your working, decide if Anand’s statement is correct or not.

Correct ☐

Incorrect ☐

[3 marks]

continued on the next page . . .

Question 5 continued

5. (b) What is the difference between the percentage of girls completing the puzzle in less than 10 seconds and the percentage of boys completing the puzzle in less than 10 seconds?

Give your answer correct to one decimal place.

Difference is _____ %,
correct to one decimal place

[4 marks]

6. Look at the table for Question 6 in the separate Diagram Booklet.

The table gives the heights of the 27 musicians in the Camwen Youth Orchestra.

(a) (i) In which group does the median height of a musician lie?
You must give a reason for your answer.

Group: _____

_____

_____

continued on the next page . . .

Reason: _____

_____

_____

_____

[2 marks]

continued on the next page . . .

Question 6 (a) continued

6. (a) (ii) Is it certain that there is at least one musician in the orchestra who is less than 154 cm tall?

Give a reason for your answer.

Yes ☐ **No** ☐

41

[1 mark]

continued on the next page . . .

Question 6 continued

6. (b) Calculate an estimate of the mean height of a musician in the Camwen Youth Orchestra.

43

[4 marks]

7. Layla has been set a target by her fitness trainer.

Every day, Layla has to increase the number of steps she does.

Today, Layla did 1800 steps.

Layla's target for the number of steps per day:

Increase by 2% every day for the next 28 days

continued on the next page . . .

Question 7 continued

Calculate the number of steps Layla's trainer is expecting her to do on the last of these 28 days.

[4 marks]

8. Paper comes in standard sizes.

Look at the table for Question 8 in the separate Diagram Booklet.

(a) Which paper size has an area of approximately 500 000 mm^2 ?

Circle your answer.

A0	A1	A2	A3	A4

[1 mark]

Question 8 continued

8. (b) The mass of paper is measured in grams.

The quality of paper is given by its mass per square metre of paper.

The quality of a sheet of A2 paper used for printing is stated as 120 g/m^2

continued on the next page . . .

Question 8 (b) continued

Complete the following statement.

‘This sheet of A2 paper has a mass of _____ g.’

[4 marks]

continued on the next page . . .

Question 8 continued

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

Sheets of A4 and A5 paper are mathematically similar.

Calculate the length of the DIAGONAL of a sheet of A5 paper.

You must show all your working.

(Turn over)

[5 marks]

continued on the next page . . .

Question 8 continued

8. (d) The measurements for the A1 sheet of paper in the table are correct to the nearest mm. Calculate the greatest possible perimeter of an A1 sheet of paper.

[3 marks]

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

The cost of sending a package depends on its volume. This is shown in the table.

Ask for the model for Question 9.

The model is NOT made to scale.

The model represents a package.

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

The diagram is NOT drawn to scale.

The diagram shows the front face of the package.

continued on the next page . . .

Question 9 continued

A rectangular ‘HANDLE WITH CARE’ label is stuck on this package.

The label measures 17•5 cm by 11•1 cm.

The package is a cuboid with height 19 cm and width 6•7 cm.

Each vertex of the label touches an edge of the front face of the package.

continued on the next page . . .

Question 9 continued

Calculate the volume of the package and hence find the cost of sending this package.

You must show all your working.

(Turn over)

(Turn over)

The volume of the package

is _____

The cost of sending this package

is _____

[7 marks]

10. Delta Metals makes aluminium chimneys in the shape of open cylinders.

Each chimney has a height of 2·5 m.

The external diameter of each chimney is 0·18 m.

Calculate the external curved surface area of one of these chimneys.

Give your answer correct to 3 significant figures.

(Turn over)

[4 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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Diagram Booklet

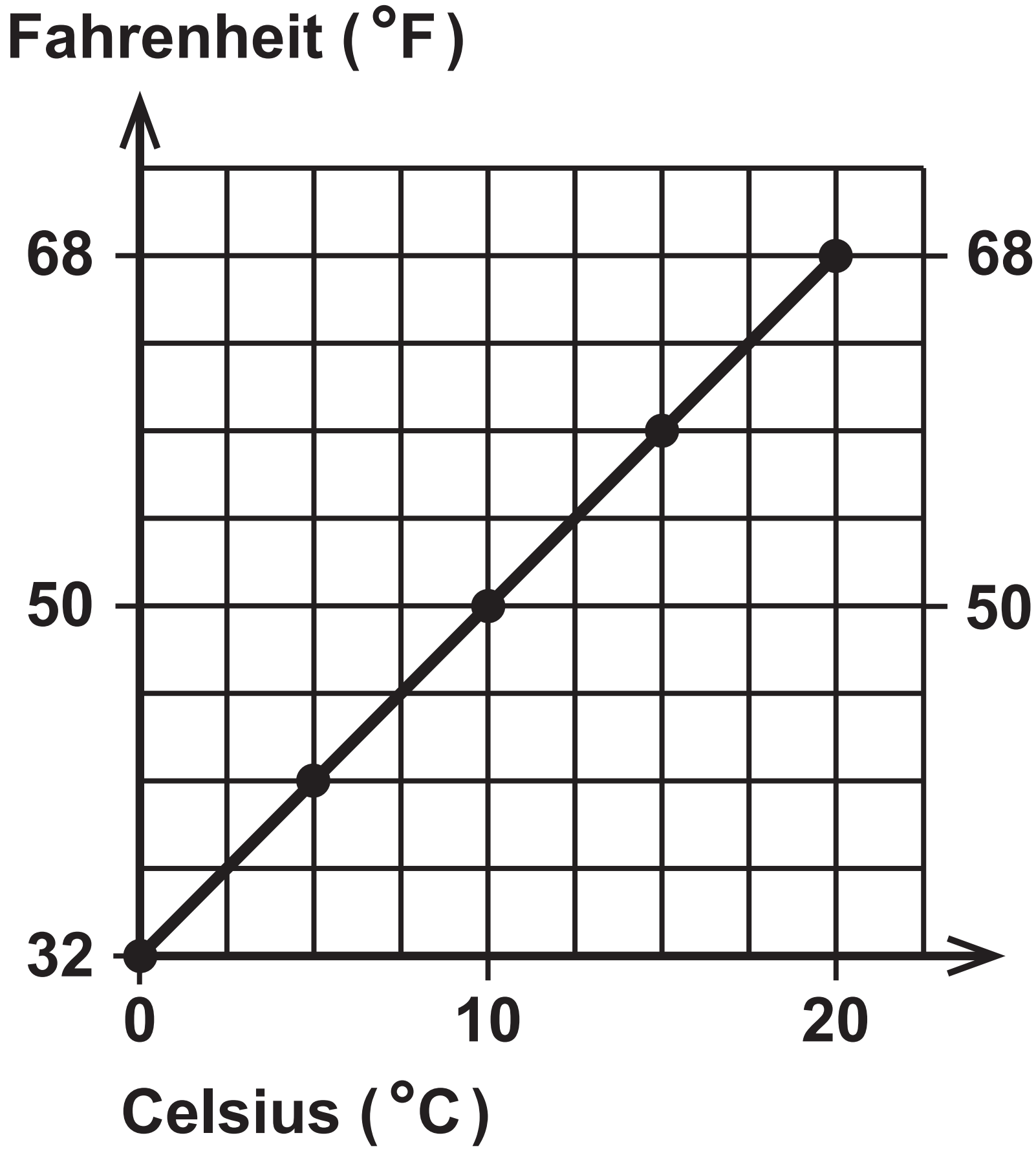
Surname: _____

First name(s): _____

Centre Number: _____

Candidate Number: 0 _____

Question 1



Question 2

Table 1

INTERNATIONAL RATE (PENCE PER MINUTE)		
BAND	**TO LANDLINES**	**TO MOBILES**
A	**30**	**60**
B	**60**	**90**
C	**120**	**150**

Question 2

Table 2

BAND	COUNTRIES
A	Canada, Hong Kong, Japan
B	Albania, China, Pakistan
C	Argentina, Kenya, Tonga, Zambia

Question 2 (b)

Information

£1 exchange rate	Japan	143.42 yen
	Pakistan	159.21 rupees
	Argentina	47.85 peso
	Tonga	2.96 pa’anga

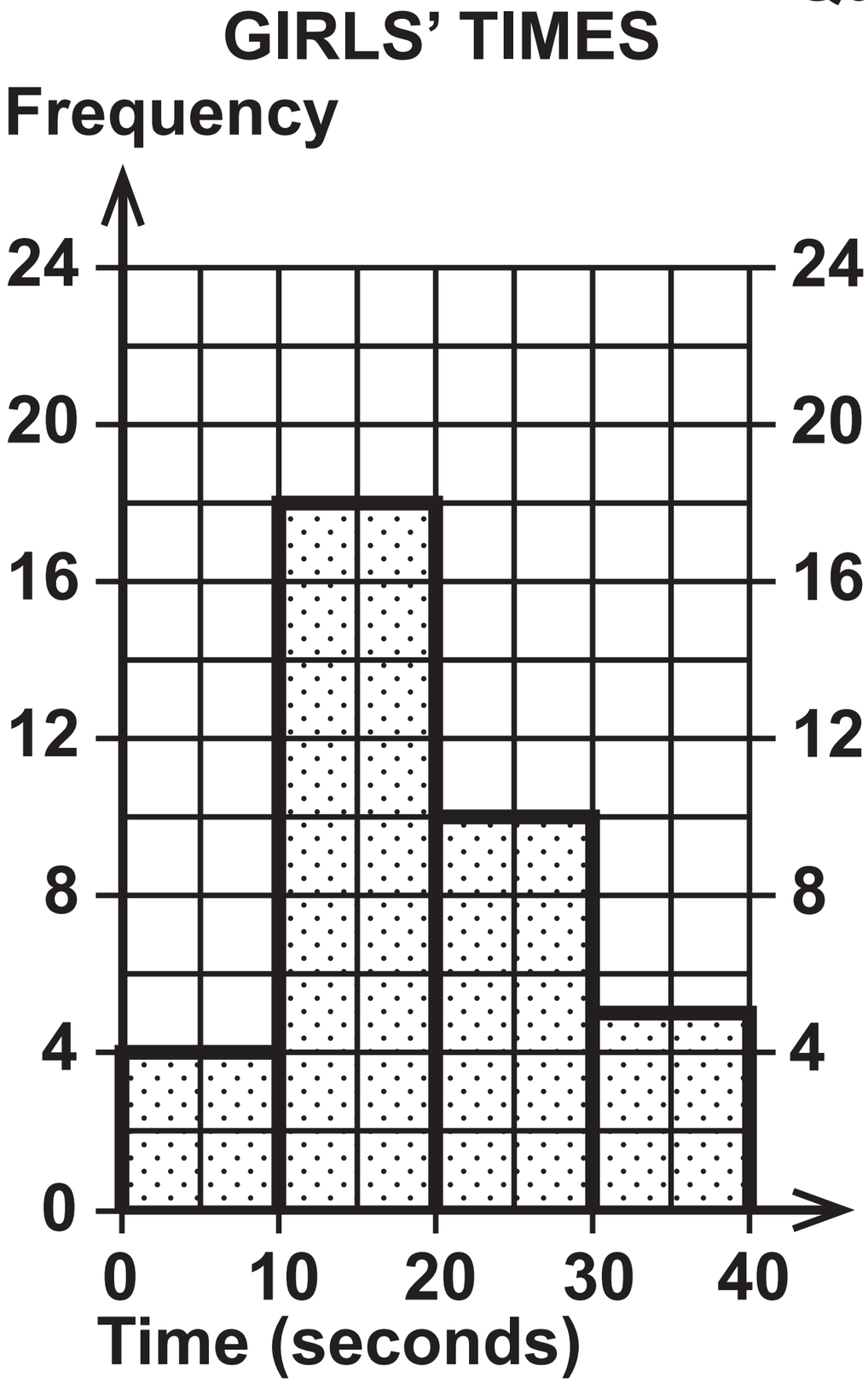
Question 3 (a)

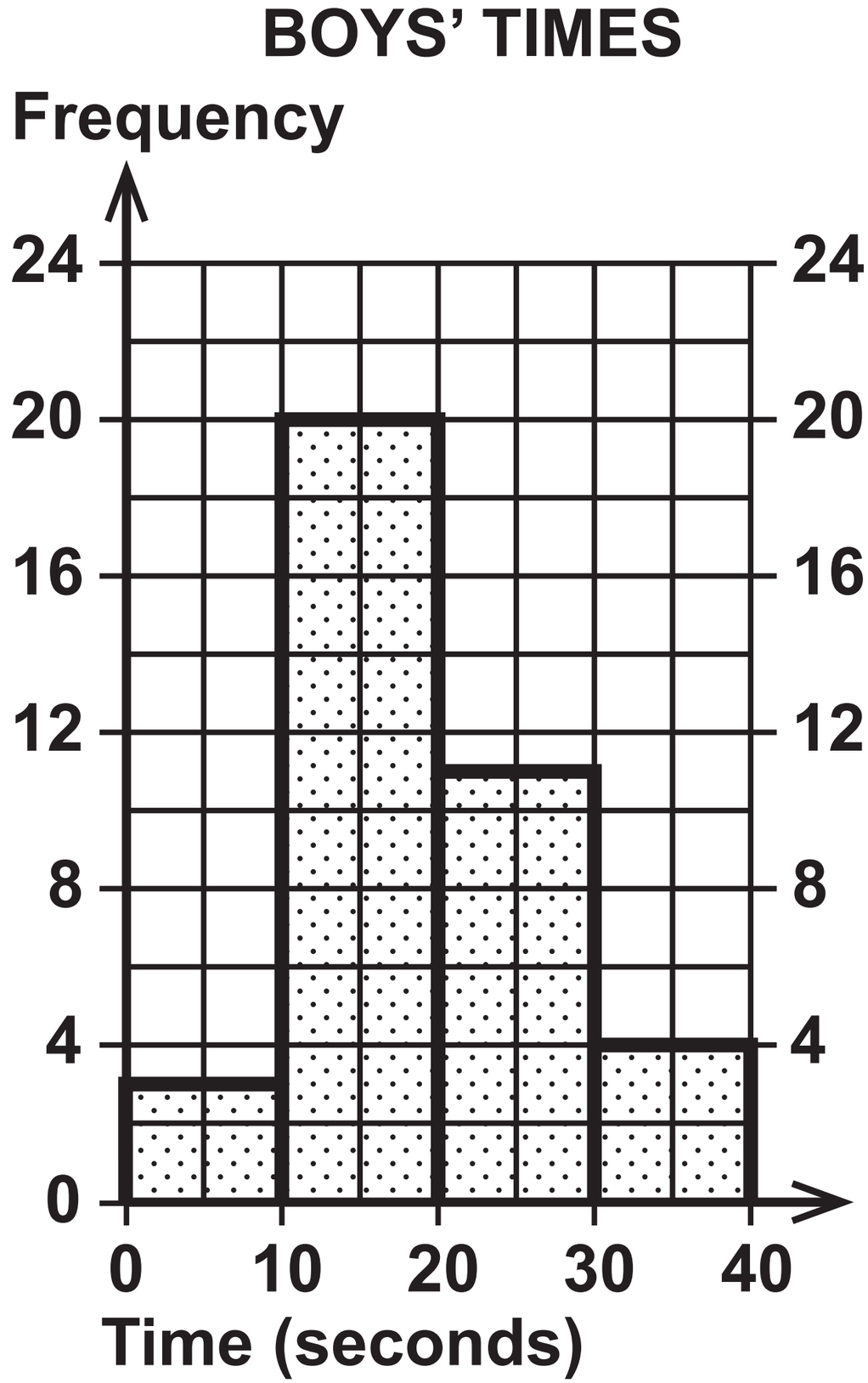
Table

GWESTY ARWEL	
Single room	£84
Twin room (total cost for two people)	£102
Group bookings get a discount of 14%	

HOTEL GLAN Y MÔR	
Single room	£58
Twin room	£34 per person

Question 5


GIRLS' TIMES
Frequency
24
20
16
12
8
4
0
0
10
20
30
40
Time (seconds)


BOYS' TIMES
Frequency
24
20
16
12
8
4
0
0
10
20
30
40
Time (seconds)

Question 6

Table

Height, h cm	Frequency
$150 \leq h < 158$	3
$158 \leq h < 166$	10
$166 \leq h < 174$	9
$174 \leq h < 182$	4
$182 \leq h < 190$	0
$190 \leq h < 198$	1

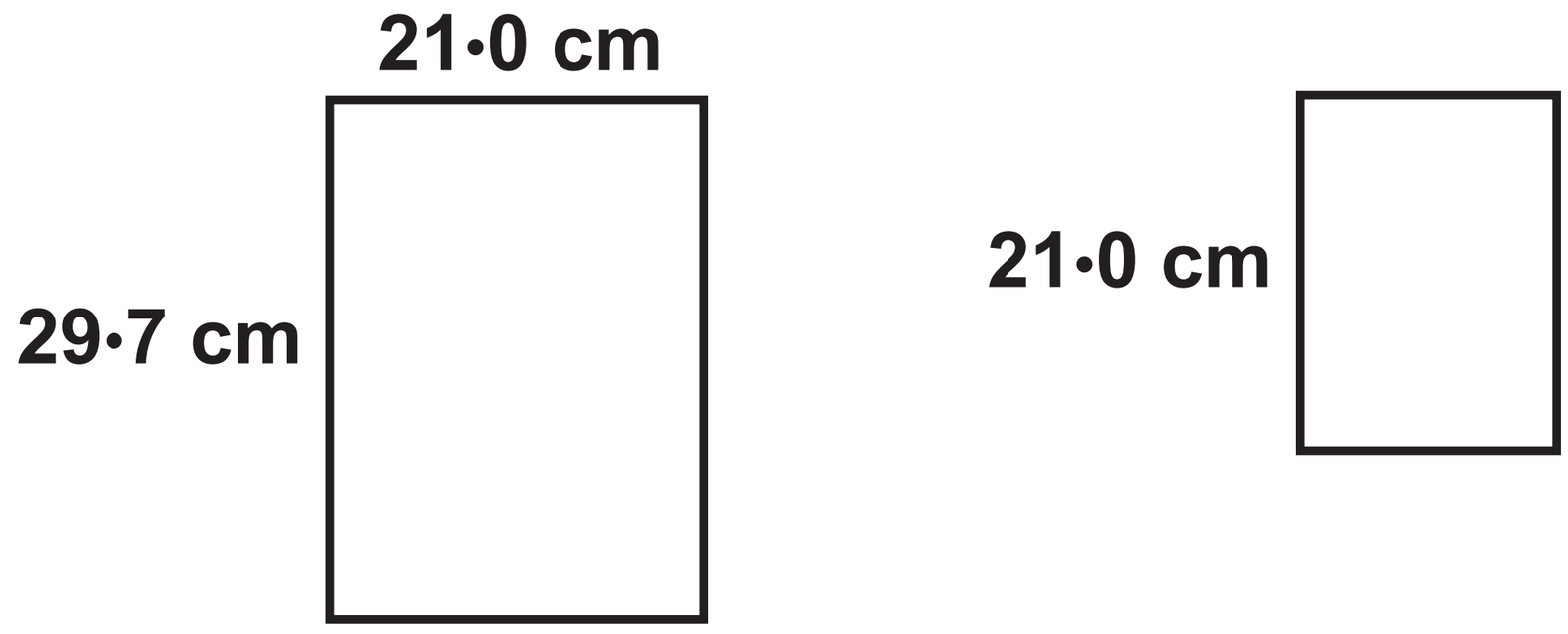
Question 8

Table

Paper size		A0	A1	A2	A3	A4
Dimensions:	Length (cm)	118•9	84•1	59•4	42•0	29•7
	Width (cm)	84•1	59•4	42•0	29•7	21•0

Question 8 (c)

Diagram NOT drawn to scale



Question 9

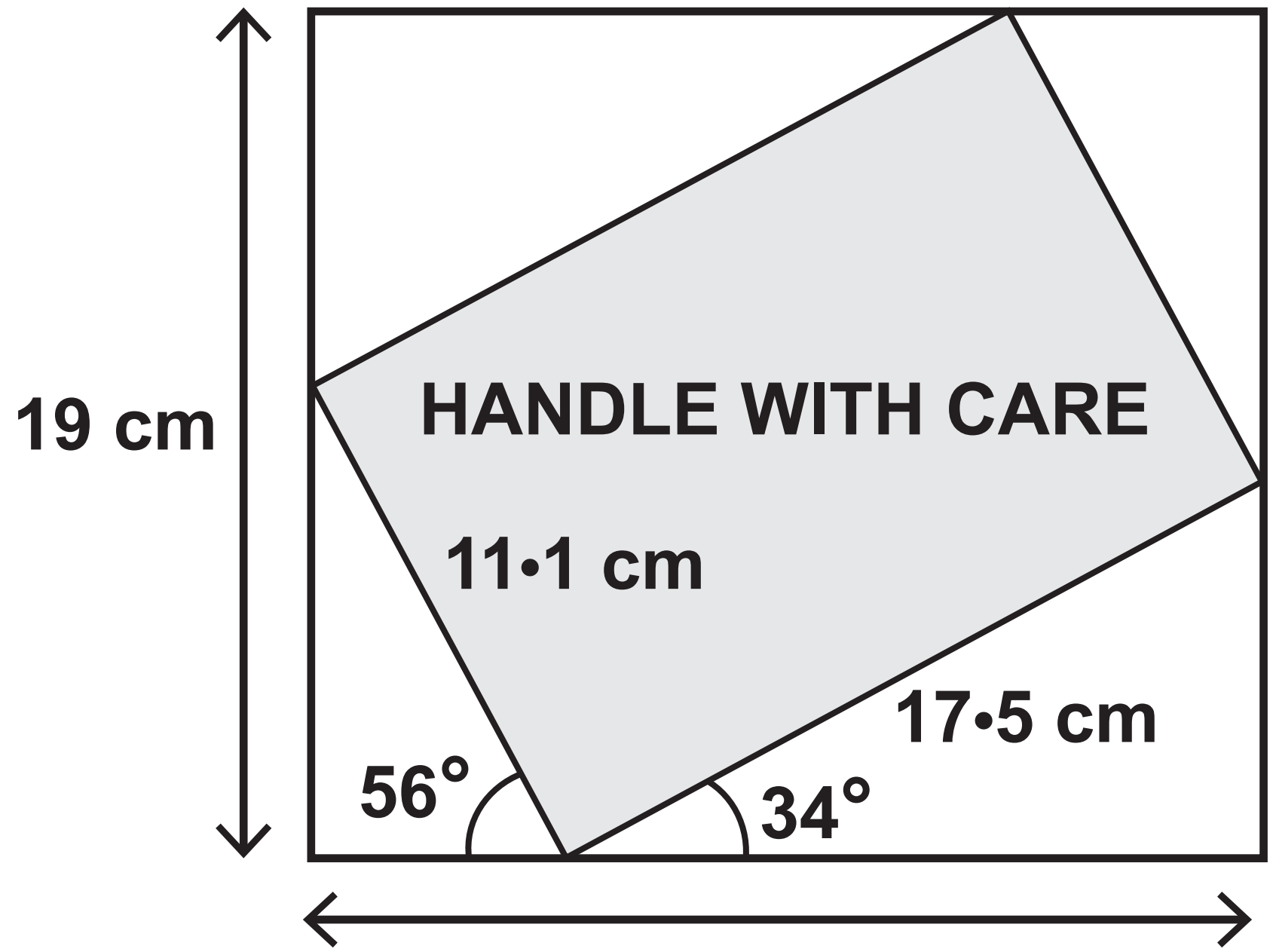
Table

VOLUME (cm^3)	COST
0 to 1000	£12.55
greater than 1000, up to 2000	£13.60
greater than 2000, up to 4000	£14.85
greater than 4000, up to 10 000	£16.25
Parcels with volume greater than 10 000 cm^3 are not accepted	

Question 9

Diagram NOT drawn to scale

Front face of the package



GCSE
MATHEMATICS
and
NUMERACY

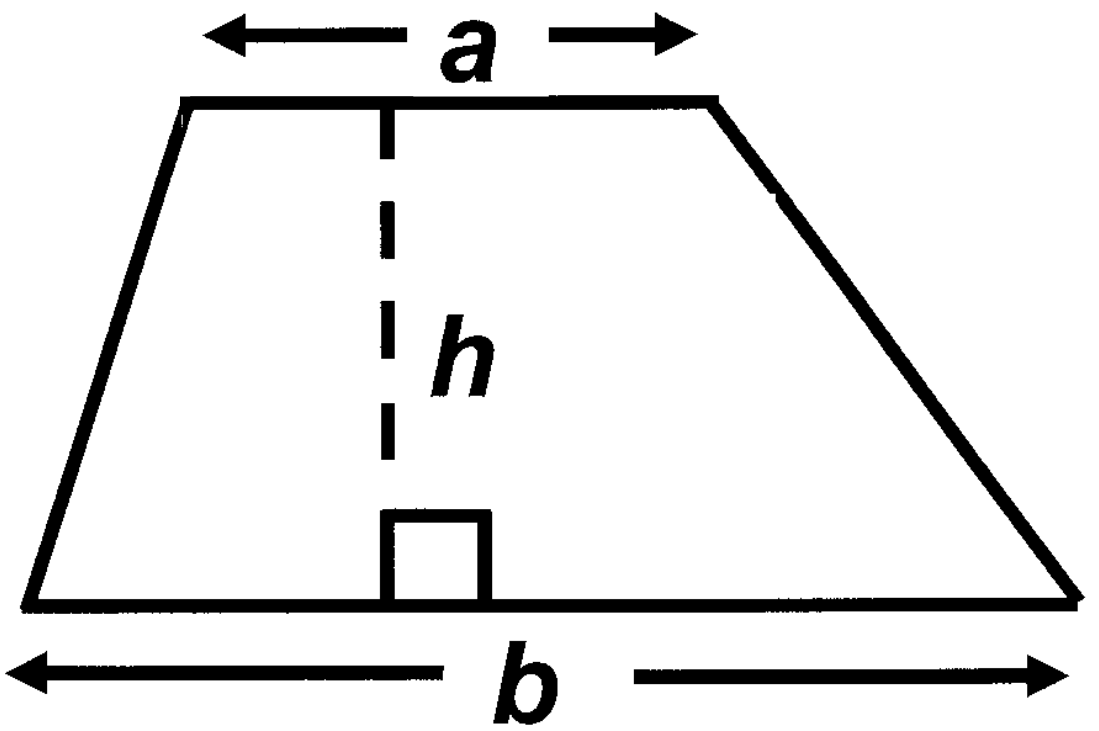
FORMULA LIST
INTERMEDIATE TIER
GCSE

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 × length