

Please write clearly in block capitals.

Centre number

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Candidate number

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Surname

Forename(s)

Candidate signature

I declare this is my own work.

GCSE MATHEMATICS

F

Foundation Tier Paper 3 Calculator

Monday 10 June 2024

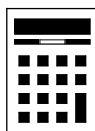
Morning

Time allowed: 1 hour 30 minutes

Materials

For this paper you must have:

- a calculator
- mathematical instruments
- the Formulae Sheet (enclosed).



Instructions

- Use black ink or black ball-point pen. Draw diagrams in pencil.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
- You must answer the questions in the spaces provided. Do not write outside the box around each page or on blank pages.
- If you need extra space for your answer(s), use the lined pages at the end of this book. Write the question number against your answer(s).
- Do all rough work in this book. Cross through any work you do not want to be marked.

Information

- The marks for questions are shown in brackets.
- The maximum mark for this paper is 80.
- You may ask for more answer paper, graph paper and tracing paper. These must be tagged securely to this answer book.

For Examiner's Use	
Pages	Mark
2–3	
4–5	
6–7	
8–9	
10–11	
12–13	
14–15	
16–17	
18–19	
20–21	
22–23	
24	
TOTAL	

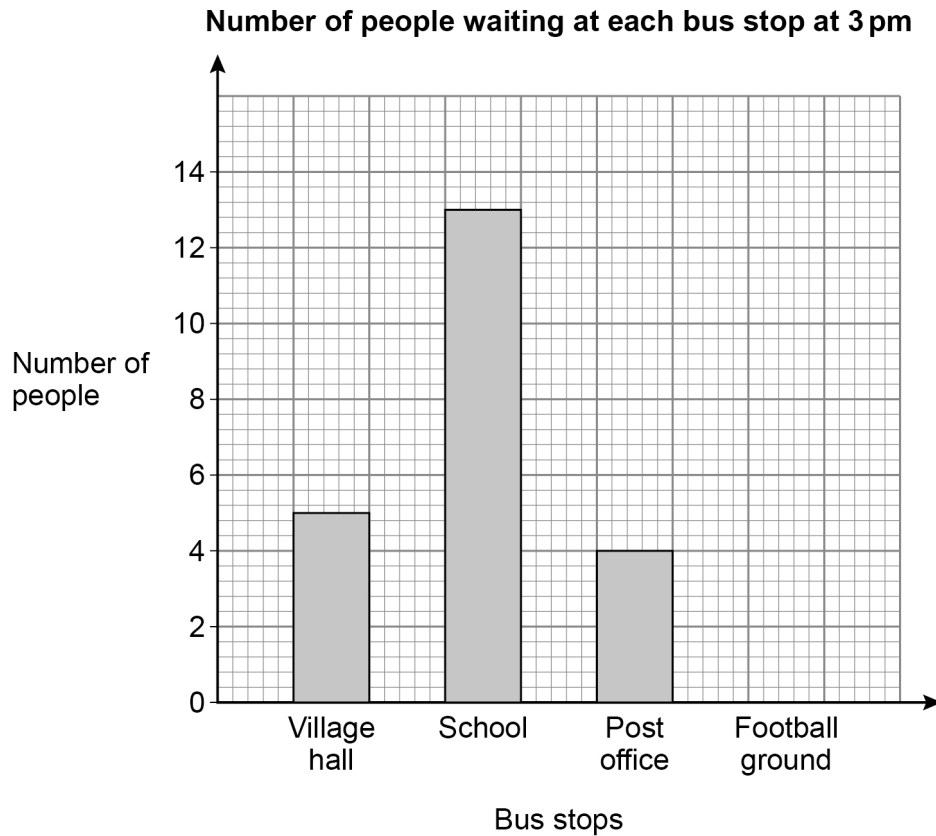
Advice

In all calculations, show clearly how you work out your answer.



Answer **all** questions in the spaces provided.

- 1** A village has four bus stops.
The bar chart shows information about the people at the bus stops at **3 pm** one day.



- 1 (a)** Two people were at the Football ground bus stop.

Show this information on the bar chart.

[1 mark]

- 1 (b)** How many **more** people were at the School bus stop than at the Post office bus stop?

[1 mark]

Answer _____



2 Here are four temperatures in degrees C

-5	3	-7	-1
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Write the temperatures in order, starting with the **coldest**.

[2 marks]

Answer _____

3 Here are the first three terms of a linear sequence.

5 11 17

3 (a) Write down the next term.

[1 mark]

Next term _____

3 (b) Describe the term-to-term rule.

[1 mark]

Term-to-term rule _____



- 4 Luca spends 71p
He pays the exact amount with 4 coins.
List the coins he uses.

[2 marks]

Answer _____

- 5 Complete each statement using **one** of these symbols.

< = >

[3 marks]

2.54 _____ 2.508

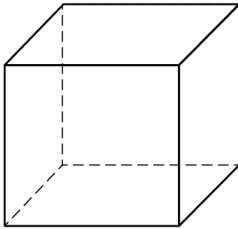
0.25 _____ $\frac{1}{4}$

2 _____ $\frac{5}{2}$

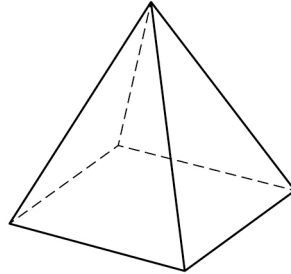


6 Here are three solids.

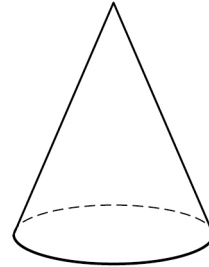
Cube



**Square-based
pyramid**



Cone



6 (a) How many **faces** does the cube have?

[1 mark]

Answer _____

6 (b) How many **edges** does the square-based pyramid have?

[1 mark]

Answer _____

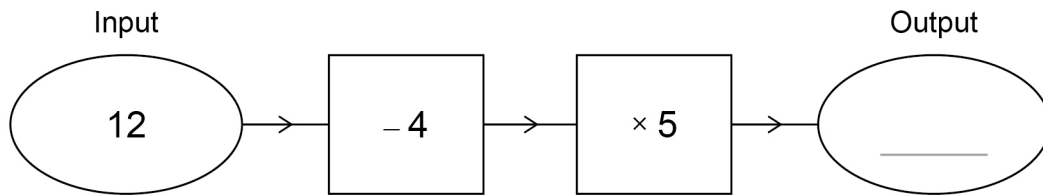
6 (c) How many **vertices** does the cone have?

[1 mark]

Answer _____



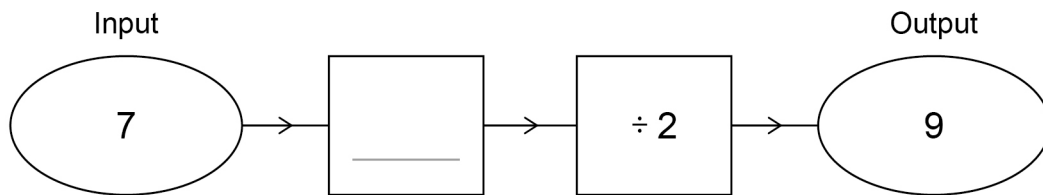
7 (a) Here is a number machine.



Complete the number machine.

[1 mark]

7 (b) Here is a different number machine.

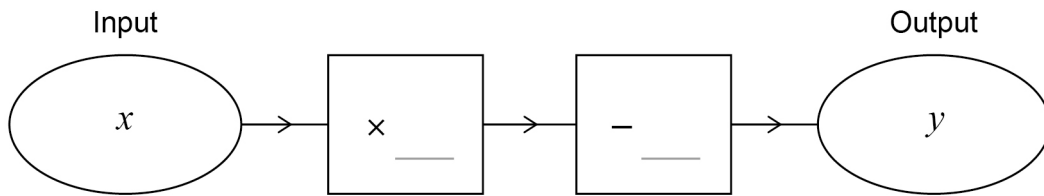


Complete the number machine.

[1 mark]



7 (c) Here is a different number machine.



When $x = 5$ $y = 13$

and

when $x = 10$ $y = 28$

Complete the number machine.

[2 marks]

Turn over for the next question

Turn over ►



8

- A pack of pegs costs 40p
- A bar of soap costs £2.20
- A basket costs £7

Dan buys **two** packs of pegs, **one** bar of soap and **one** basket.

What fraction of the total cost is the cost of the basket?

[3 marks]

Answer _____

9

Calculate $\sqrt{625} + 7^3$

[2 marks]

Answer _____



10

8400 fans go to a rugby match.

6850 of the fans support the **Home** team.

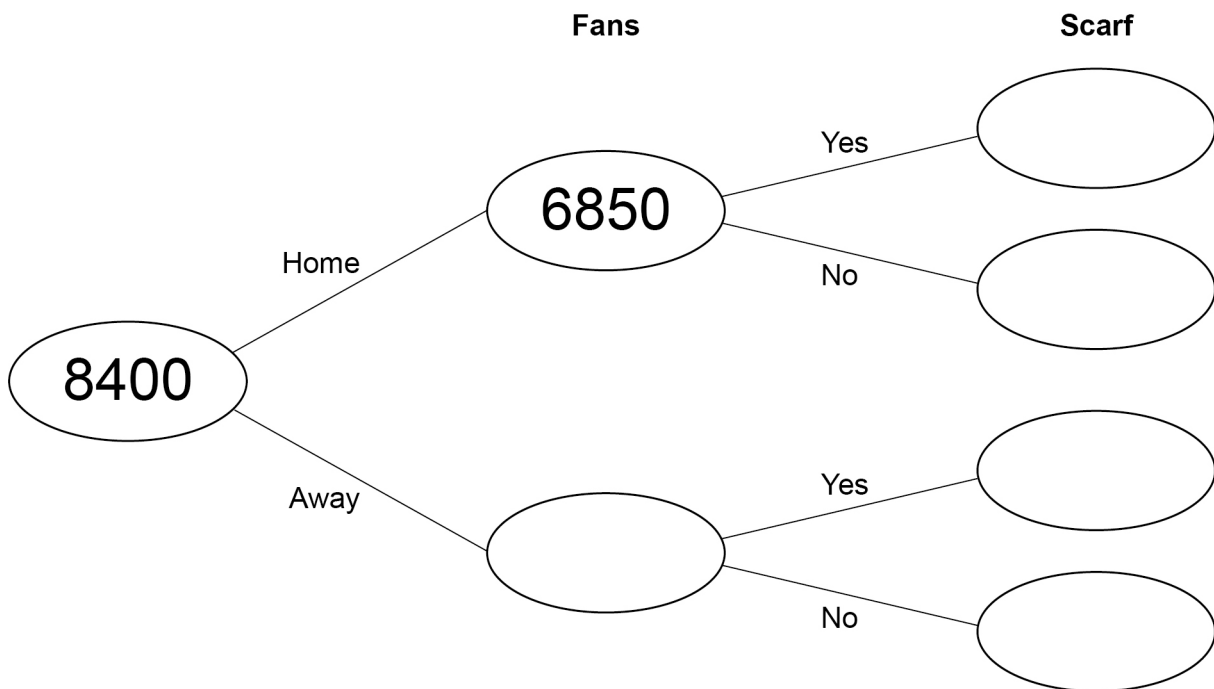
The remaining fans support the **Away** team.

20% of the **Home** fans wear a scarf.

2319 of all the fans wear a scarf.

Complete the frequency tree.

[5 marks]



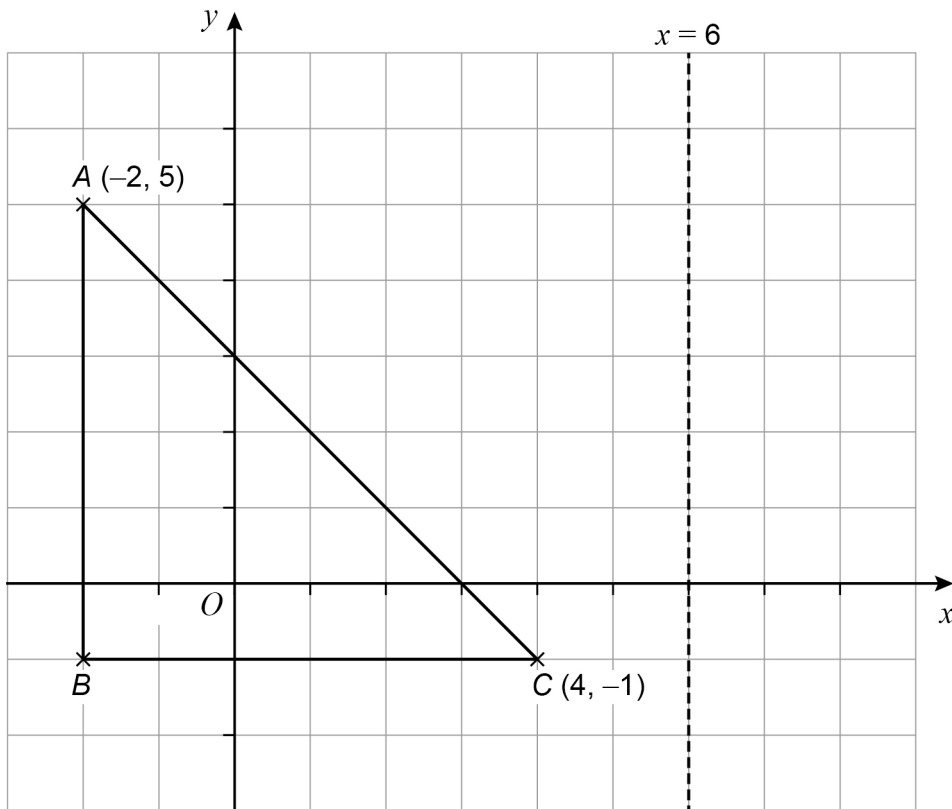
Turn over for the next question

10

Turn over ►



11



11 (a) Work out the coordinates of B .

[1 mark]

Answer (_____ , _____)

11 (b) Point C is reflected in the line $x = 6$ to point D .

Work out the coordinates of D .

[1 mark]

Answer (_____ , _____)

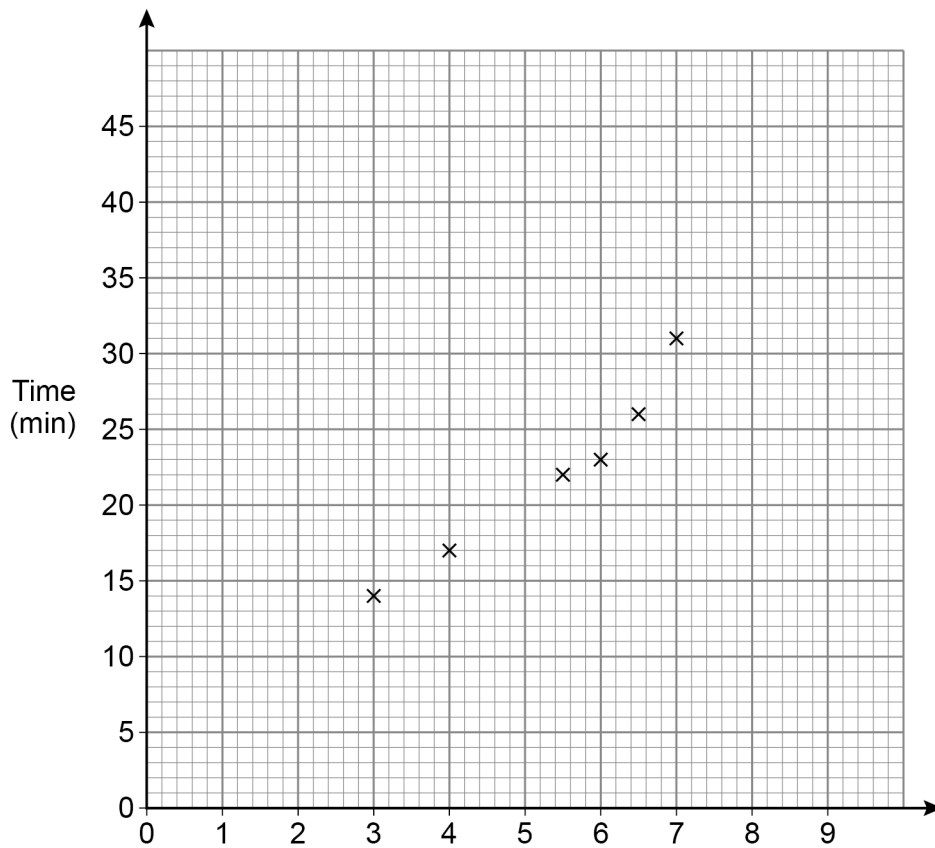


12 Liz records the distance of some runs and the time each run takes.

Distance (km)	3	4	5.5	6	6.5	7	8	8.5
Time (min)	14	17	22	23	26	31	38	42

The scatter graph shows **some** of the information from the table.

Running distances and time taken



12 (a) Complete the graph by adding the missing **label** and plotting the **two** missing points. **[2 marks]**

12 (b) Describe the correlation shown in the scatter graph. **[2 marks]**

Type of correlation _____

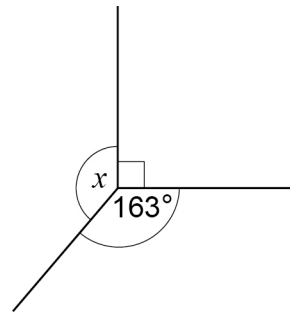
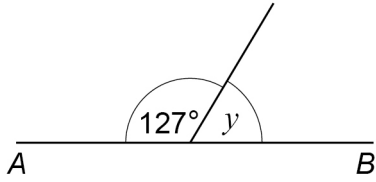
Strength of correlation _____

6

Turn over ►



13

 AB is a straight line.Not drawn
accuratelyIs y half of x ?

Tick a box.

Yes

No

Show working to support your answer.

[3 marks]



14 Multiply out $3(2x + 8)$

[2 marks]

Answer _____

15 Complete these statements.

[3 marks]

$$\underline{\hspace{2cm}} + 5x = 9x$$

$$y \times \underline{\hspace{2cm}} = y^2$$

$$\underline{\hspace{2cm}} - 2t = t$$

Turn over for the next question

Turn over ►



- 17 (a)** There are 30 students in a class.
12 of the students have school lunch.

Work out the ratio

students having school lunch : students not having school lunch

Give your answer in its simplest form.

[2 marks]

Answer _____ : _____

- 17 (b)** In a different class
students wearing glasses : students not wearing glasses = 3 : 8

What fraction of students in this class wear glasses?

[1 mark]

Answer _____

- 17 (c)** The ratio 4 : 9 is written in the form 1 : n

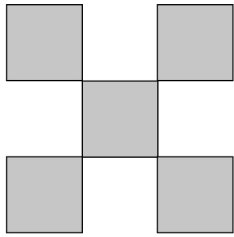
Work out the value of n .

[1 mark]

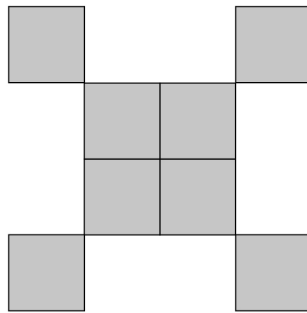
$n =$ _____



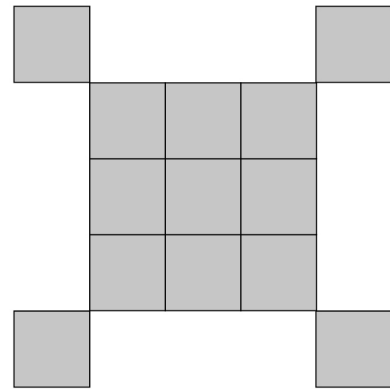
18 Here are the first three Patterns in a sequence made up of small squares.



Pattern 1



Pattern 2



Pattern 3

18 (a) On the grid, draw Pattern 4

[1 mark]



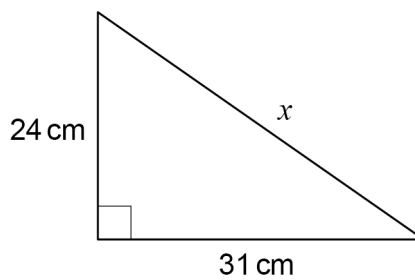
18 (b) The expression for the number of small squares in Pattern n is $n^2 + 4$

Work out the least value of n for which the number of small squares is greater than 500

[1 mark]

$n =$ _____

19



Not drawn
accurately

Use Pythagoras' theorem to work out the value of x .

Give your answer as a decimal.

[3 marks]

Answer _____ cm



- 20** Rick claims most of the flats in his 8-floor building are energy efficient.
He samples 45 flats from floors 1 to 5
Give a reason why this sample may **not** be useful in testing Rick's claim. **[1 mark]**

- 21** $3(x - 1) \equiv 3x - 3$ is an identity.
Tick **one** box. **[1 mark]**

It is true for **all** values of x

It is true for **some** values of x

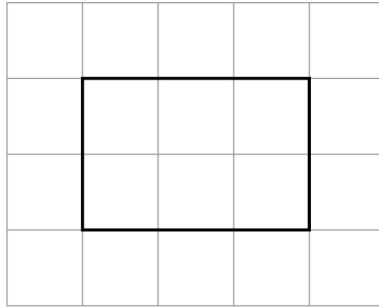
It is true for **no** values of x



23

The front elevation of a cuboid is shown on this centimetre grid.

Front elevation

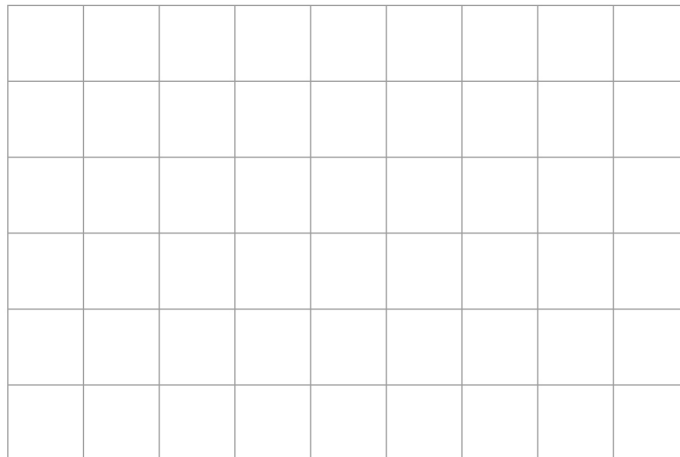


The volume of the cuboid is 42 cm^3

Draw the **side elevation** on this centimetre grid.

[2 marks]

Side elevation



- 24 (a)** On Monday, Larrs swims 50 metres in 40 **seconds** at a constant speed.
On Tuesday, Larrs swims 1.5 kilometres.

Assume he swims at the same constant speed as on Monday.

How many **minutes** does he swim for on Tuesday?

[5 marks]

Answer _____ minutes

- 24 (b)** In fact, on Tuesday Larrs swims at a slower constant speed than on Monday.
What does this mean about the number of minutes he swims for on Tuesday?
Tick the correct box.

[1 mark]

It is less than the answer to part (a)

It is the same as the answer to part (a)

It is greater than the answer to part (a)

It is not possible to say



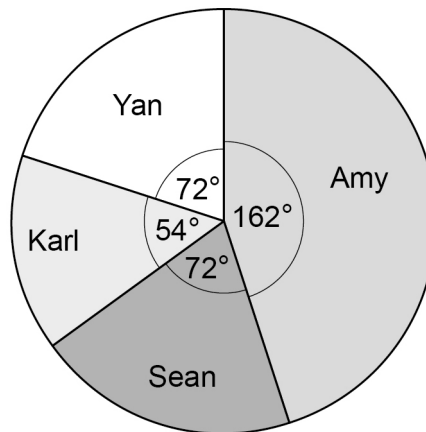
25

Four people are taking part in a television talent show.

Here are Amy's marks from the 6 judges.

8	9	9	6	9	10
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The pie chart represents the phone vote.



Amy's total score is found by

$4 \times \text{the mean of her marks}$ $+$ $\text{her percentage of the phone vote}$



- 26** House prices on a street increase by 5.1% each year.
Show that after 14 years the house prices on the street will be at least double. **[2 marks]**

- 27** Town A has
a population of 84 000
an area of 7 **square miles**.
Town B has a population density of 4695 people per **square kilometre**.

$$\text{Population density} = \frac{\text{population}}{\text{area}}$$

Which town has the greater population density?

Use 1 square mile = 2.6 square kilometres

Tick a box.

Town A Town B

Show working to support your answer.

[3 marks]

END OF QUESTIONS

