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Surname	Other names
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<b>Pearson Edexcel</b> <b>Level 1/Level 2 GCSE (9–1)</b>	Centre Number <input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/>	Candidate Number <input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/>
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# Mathematics

## Paper 2 (Calculator)

### Aiming for 5

### Foundation Tier

<b>Spring 2023 Practice Paper</b> <b>Time: 1 hour 30 minutes</b>	Paper Reference <h2 style="margin: 0;">1MA1/2F</h2>
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**You must have:** Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser, calculator. Tracing paper may be used.

Total Marks

### Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided – *there may be more space than you need.*
- You must **show all your working**.
- Diagrams are **NOT** accurately drawn, unless otherwise indicated.
- **Calculators may be used.**
- If your calculator does not have a  $\pi$  button, take the value of  $\pi$  to be 3.142 unless the question instructs otherwise.



### Information

- The total mark for this paper is 80. There are 24 questions.
- Questions have been arranged in an ascending order of mean difficulty, as found by students achieving Grade 4 in the Summer and November 2022 examinations.
- The marks for **each** question are shown in brackets – *use this as a guide as to how much time to spend on each question.*

### Advice

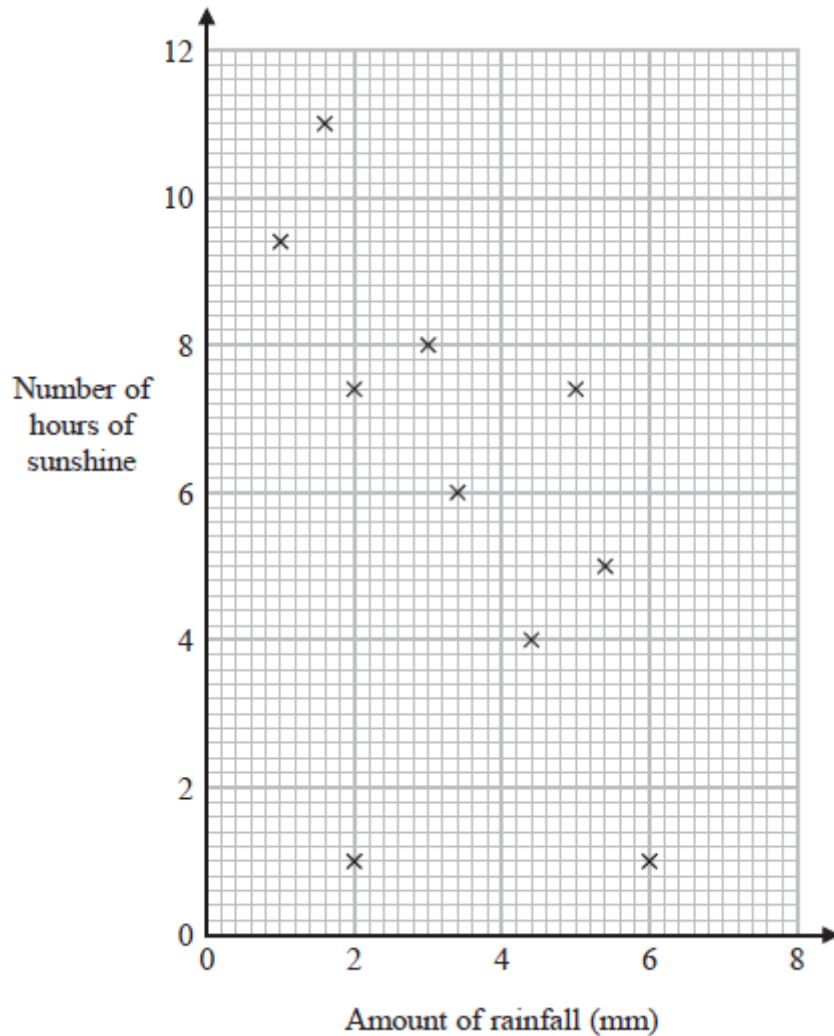
- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

Answer ALL TWENTY FOUR questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

- 1 The scatter graph shows information about the amount of rainfall, in mm, and the number of hours of sunshine for each of ten English towns on the same day.



One of the points is an outlier.

- (a) Write down the coordinates of this point.

( ..... , ..... )  
**(1)**

(b) Ignoring the outlier, describe the relationship between the amount of rainfall and the number of hours of sunshine.

.....  
.....  
.....

(1)

On the same day in another English town there were 7 hours of sunshine.

(c) Using the scatter graph, estimate the amount of rainfall in this town on this day.

..... mm

(2)

**(Total for Question 1 is 4 marks)**

---

2 Festival A will be in a rectangular field with an area of  $80\,000\text{ m}^2$   
The greatest number of people allowed to attend Festival A is 425

Festival B will be in a rectangular field 700 m by 2000 m.  
The greatest number of people allowed to attend Festival B is 6750

The area per person allowed for Festival B is greater than the area per person allowed for Festival A.

- (a) How much greater?  
Give your answer correct to the nearest whole number.

.....  $\text{m}^2$   
**(4)**

Callum says,

“ $300\text{ cm}^2$  is the same as  $3\text{ m}^2$  because there are 100 cm in 1 m so you divide by 100”

Callum’s method is wrong.

- (b) Explain why.

.....  
.....  
.....

**(1)**

**(Total for Question 2 is 5 marks)**

3 Nimra buys a 3 kg box of sweets for £17.60

She puts the sweets into bags to sell.

Each bag contains 150 g of sweets.

Nimra fills as many bags as possible.

She will sell each bag for the same price.

Nimra wants to make a profit of at least 35%

Assuming she sells all the bags,

what is the lowest price Nimra should charge for each bag?

£.....

**(Total for Question 3 is 5 marks)**

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4 A shop has two different special offers on milk.



75p

Pay for 2 bottles  
get 1 bottle free



£1.28

Pay for 1 bottle  
get 1 bottle half price

Which offer gives the better value for money?  
You must show how you get your answer.

**(Total for Question 4 is 4 marks)**

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5 (a) Simplify  $(x^3)^5$

.....

**(1)**

(b) Expand and simplify  $4(x + 3) + 7(4 - 2x)$

.....

**(2)**

(c) Factorise fully  $15x^3 + 3x^2y$

.....

**(2)**

**(Total for Question 5 is 5 marks)**

---

6 Here are the first five terms of an arithmetic sequence.

7            13            19            25            31

(a) Find an expression, in terms of  $n$ , for the  $n$ th term of this sequence.

The  $n$ th term of a different sequence is  $8 - 6n$

.....  
(2)

(b) Is  $-58$  a term of this sequence?

You must show how you get your answer.

(2)

**(Total for Question 6 is 4 marks)**

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7 A new phone cost £679

The value of the phone decreases at a rate of 4% per year.

Work out the value of the phone at the end of 3 years.

£.....

**(Total for Question 7 is 3 marks)**

---



8 This sign was in a doctor's waiting room.

115 appointments were missed last month.  
These missed appointments were a total of 25.3 hours.

Work out the mean length of time for each missed appointment.  
Give your answer in minutes.

..... minutes

**(Total for Question 8 is 3 marks)**

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- 9 The table shows information about the number of social media accounts used by each of 300 students.

Number of social media accounts	Frequency
0	3
1	57
2	84
3	75
4	81

- (a) Work out the total number of social media accounts used by these students.

.....  
(2)

- (b) Find the median number of social media accounts used by these students.

.....  
(2)

**(Total for Question 9 is 4 marks)**

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- 10** Water flows through each of the pipes that fill a lake at the same rate.  
It takes 4 of the pipes 12 hours to fill the lake.

Work out how many hours it would take 6 pipes to fill  $\frac{1}{4}$  of the lake.

..... hours

**(Total for Question 10 is 3 marks)**

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- 11** Ella invests £7000 for 2 years in an account paying compound interest.

In the first year, the rate of interest is 3%

In the second year, the rate of interest is 1.5%

Work out the value of Ella's investment at the end of 2 years.

£.....

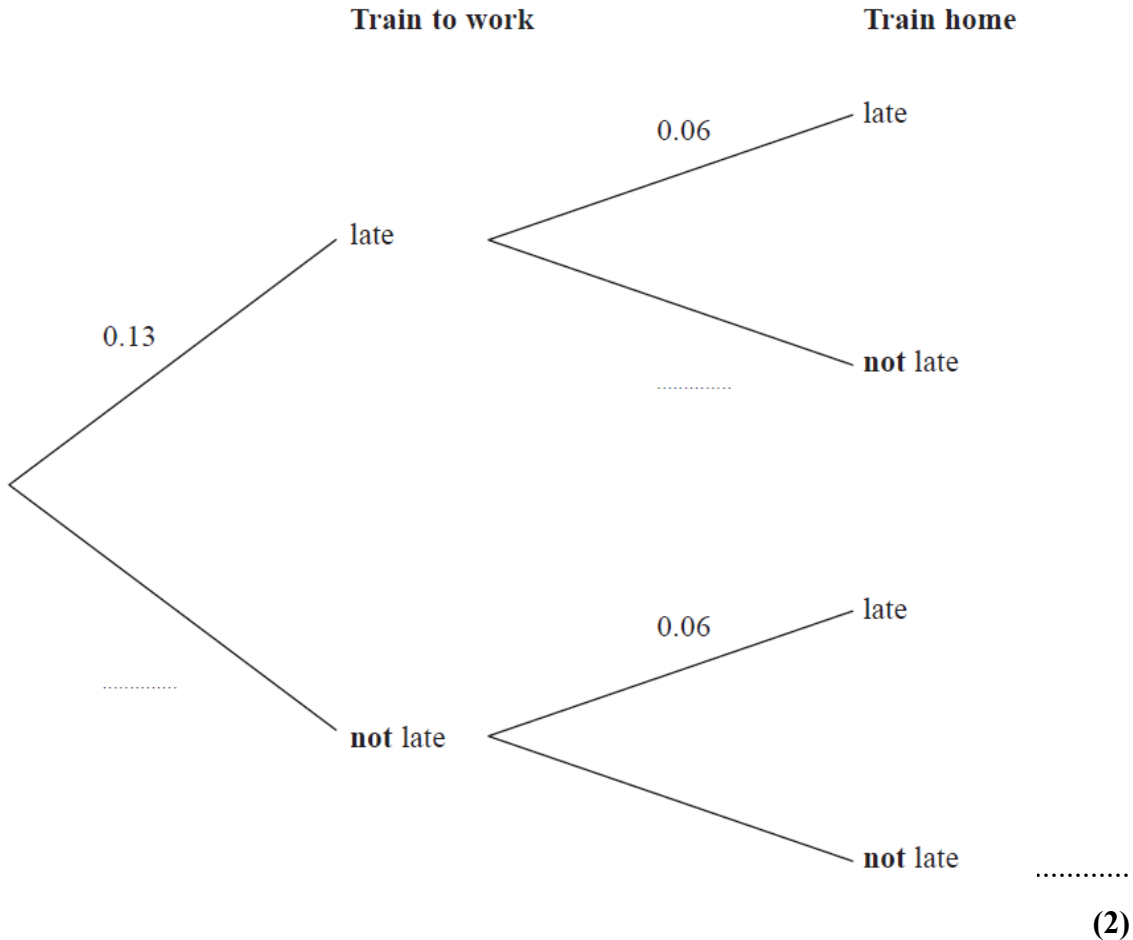
**(Total for Question 11 is 3 marks)**

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12 Lorena gets a train at the same time each morning to go to work. She gets a train at the same time each evening to come home.

The probability tree diagram shows the probabilities of each train arriving late.

(a) Complete the probability tree diagram.



For a day that Lorena goes to work,

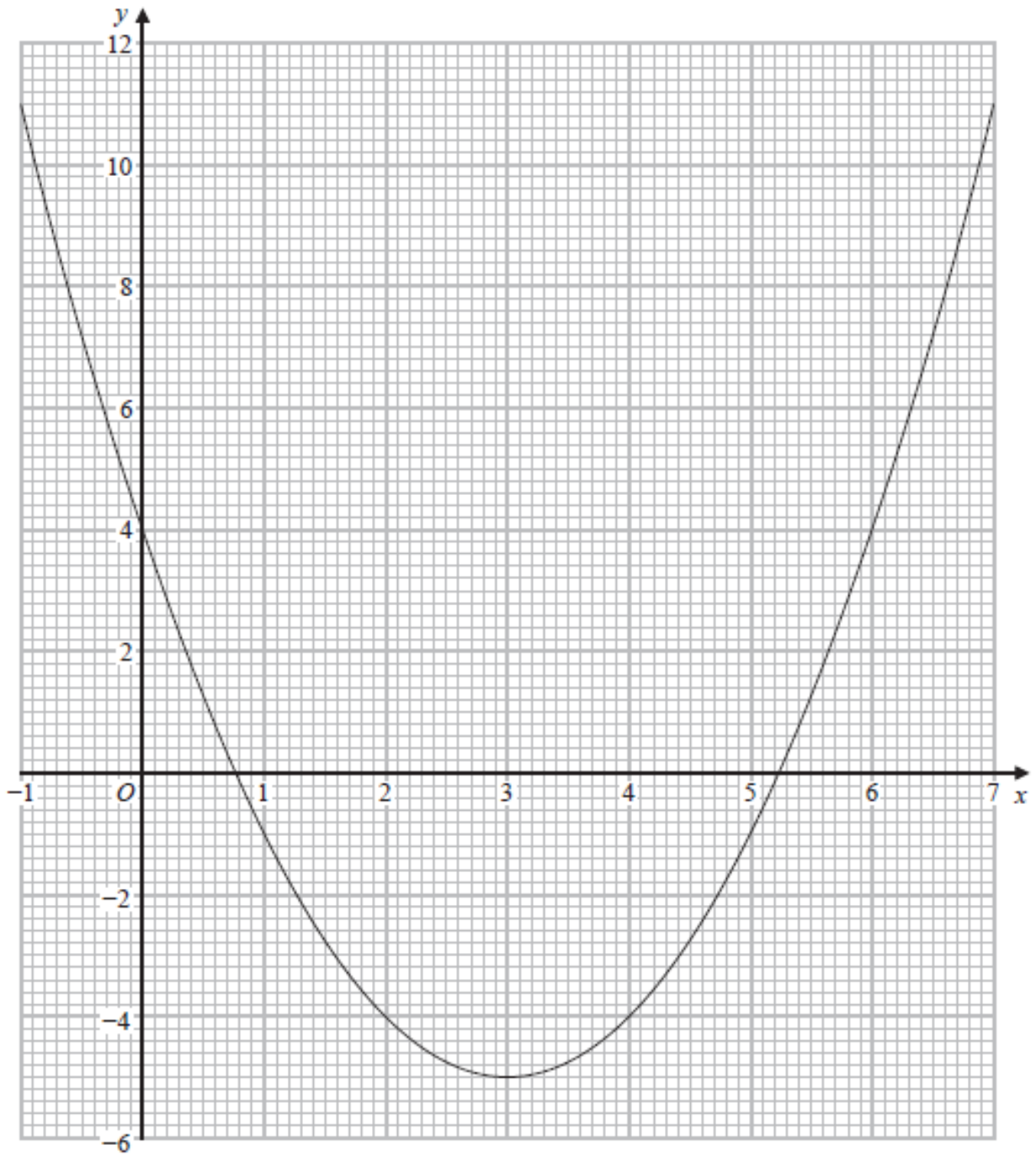
(b) work out the probability that the train to work and the train home will both arrive late.

.....  
**(2)**

**(Total for Question 12 is 4 marks)**

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13 Here is the graph of  $y = x^2 - 6x + 4$



(a) Write down the  $y$  intercept of the graph of  $y = x^2 - 6x + 4$

.....  
(1)

(b) Write down the coordinates of the turning point of the graph of  $y = x^2 - 6x + 4$

( ..... , ..... )  
**(1)**

(c) Use the graph to find estimates for the roots of  $x^2 - 6x + 4 = 0$

.....  
**(2)**

**(Total for Question 13 is 4 marks)**

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**14** Here are four cards.  
There is a number on each card.



Write down the smallest 4-digit even number that can be made using each card only once.

.....  
**(Total for Question 14 is 1 mark)**

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**15** The length of a football pitch is 90 metres, correct to the nearest metre.  
Complete the error interval for the length of the football pitch.

..... m  $\leq$  length  $<$  ..... m  
**(Total for Question 15 is 2 marks)**

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**16** Solve the simultaneous equations

$$5x + 2y = 27$$

$$6x + 4y = 28$$

$x =$  .....

$y =$  .....

**(Total for Question 16 is 3 marks)**

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17 The table shows information about the heights of 80 teenagers.

Height ( $h$ cm)	Frequency
$150 < h \leq 160$	8
$160 < h \leq 170$	14
$170 < h \leq 180$	24
$180 < h \leq 190$	30
$190 < h \leq 200$	4

Work out an estimate for the mean height of the teenagers.

..... cm

**(Total for Question 17 is 3 marks)**

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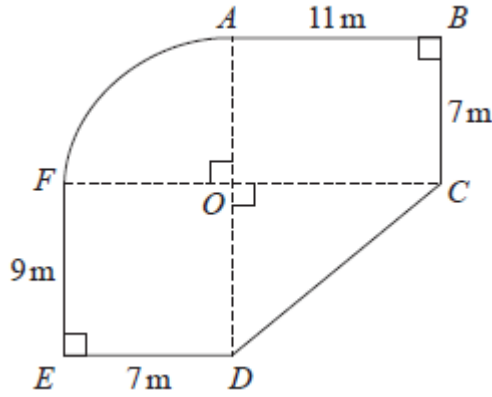


18 The diagram shows a plan of Jason's garden.

$ABCO$  and  $DEFO$  are rectangles.

$CDO$  is a right-angled triangle.

$AFO$  is a sector of a circle with centre  $O$  and angle  $AOF = 90^\circ$



Jason is going to cover his garden with grass seed.

Each bag of grass seed covers  $14 \text{ m}^2$  of garden.

Each bag of grass seed costs £10.95

Work out how much it will cost Jason to buy all the bags of grass seed he needs.

£.....

**(Total for Question 18 is 5 marks)**

19 (a) Find the value of the reciprocal of 0.8

.....  
(1)

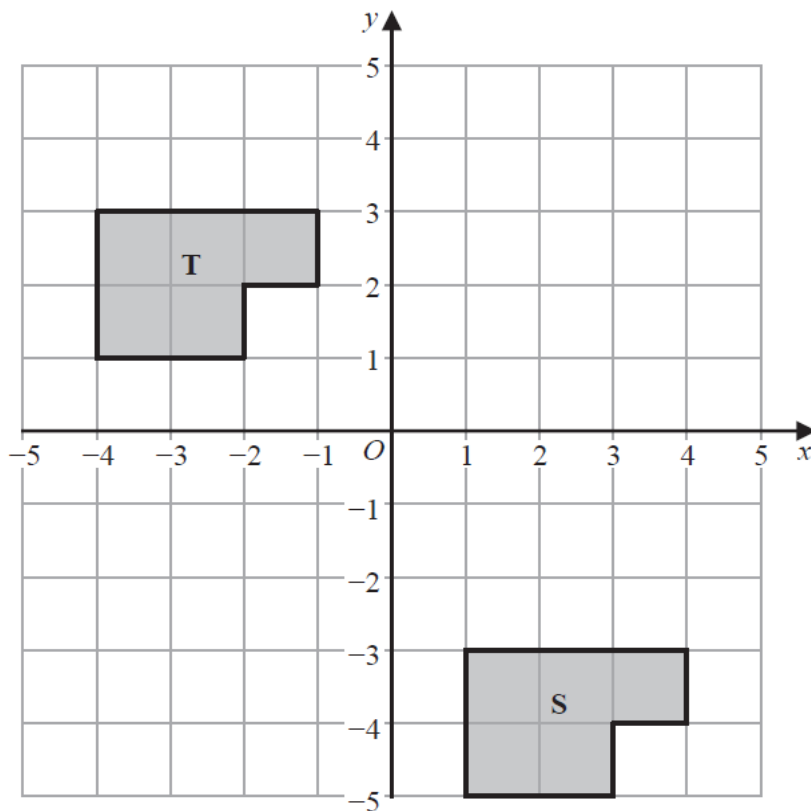
$x = 4700$  correct to 2 significant figures.

(b) Complete the error interval for  $x$ .

.....  $\leq x <$  .....

(2)  
(Total for Question 19 is 3 marks)

20

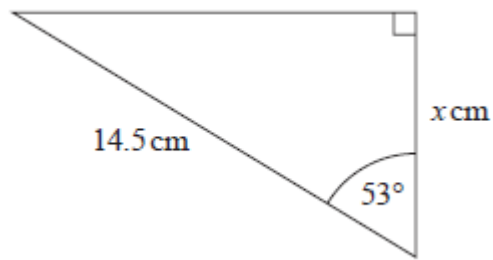


Describe fully the single transformation that maps shape S onto shape T.

.....  
.....

(Total for Question 20 is 2 marks)

21



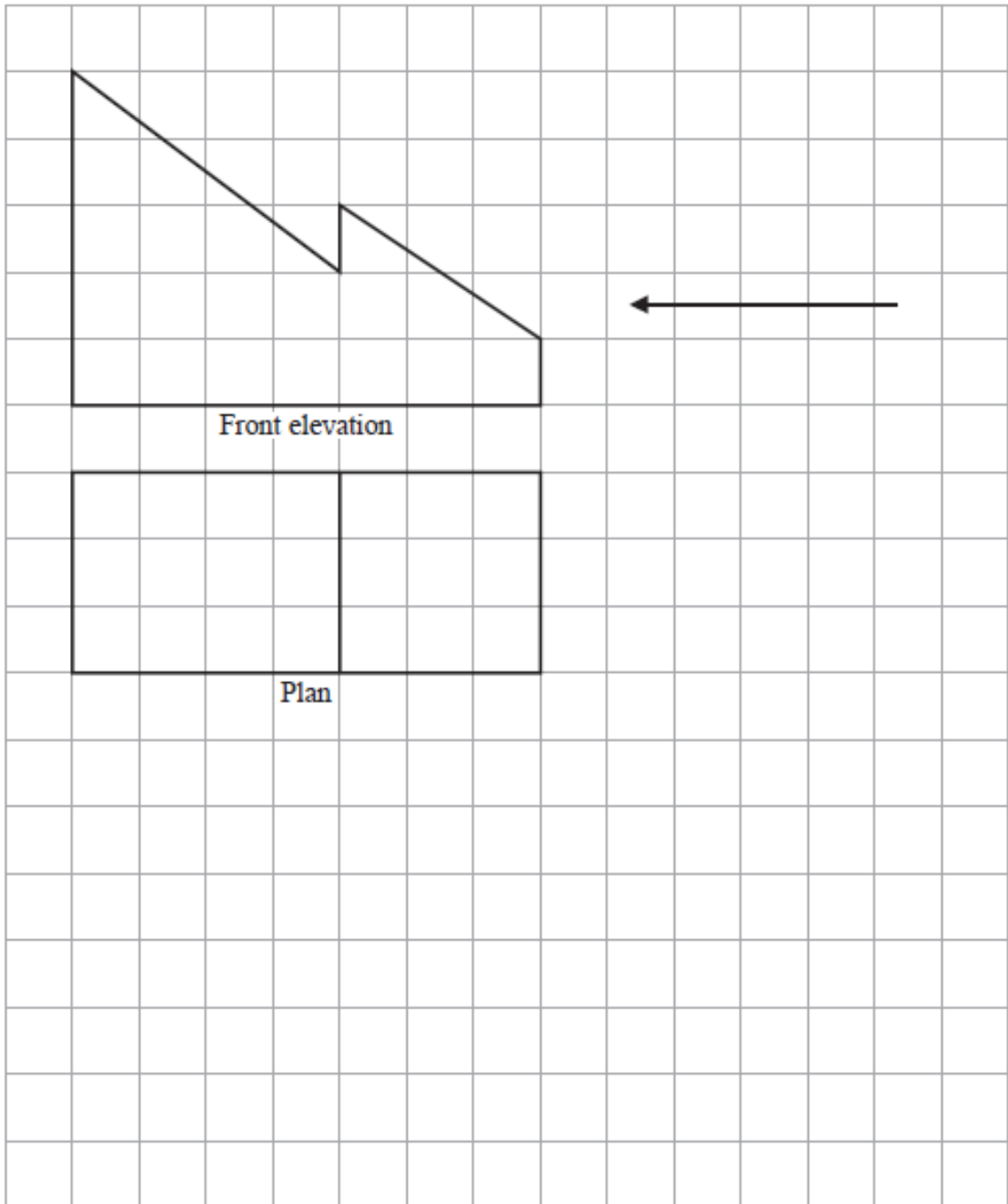
Work out the value of  $x$ .  
Give your answer correct to 3 significant figures.

$x = \dots\dots\dots$

**(Total for Question 21 is 2 marks)**

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- 22 The front elevation and the plan of a solid are shown on the grid.  
On the grid, draw the side elevation of the solid from the direction of the arrow.



(Total for Question 22 is 2 marks)

- 23** The population of a town increased by 9% between 2018 and 2019  
The population in 2019 was 165 680

Calculate the population in 2018

.....  
**(Total for Question 23 is 2 marks)**

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24 The points  $L$ ,  $M$  and  $N$  are such that  $LMN$  is a straight line.

The coordinates of  $L$  are  $(-3, 1)$

The coordinates of  $M$  are  $(4, 9)$

Given that  $LM : MN = 2 : 3$ ,

find the coordinates of  $N$ .

(..... , .....)

**(Total for Question 24 is 4 marks)**

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**TOTAL FOR PAPER IS 80 MARKS**