

Write your name here

Surname	Other names
---------	-------------

**Pearson Edexcel** Centre Number      Candidate Number

**Level 1/Level 2 GCSE (9-1)**

# Mathematics

## Paper 1 (Non-Calculator)

Aiming for 7

Higher Tier

<b>Spring 2023 Practice Paper</b> Time: 1 hour 30 minutes	Paper Reference <b>1MA1/1H</b>
--	-----------------------------------

<p><b>You must have:</b> Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser. Tracing paper may be used.</p>	<div style="border: 1px solid black; width: 80%; height: 40%; margin: 0 auto;"></div> <p>Total Marks</p>
--	--

### 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 not be used.**



### 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 7 in the Summer and November 2022 examinations.
- Questions marked with an asterisk (\*) also appear on the Higher Tier paper.
- 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** Write 124 as a product of its prime factors.

.....  
**(Total for Question 1 is 2 marks)**

---

- 2** Solve  $7x - 27 < 8$

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

---

3 A delivery company has a total of 160 cars and vans.

the number of cars : the number of vans = 3 : 7

Each car and each van uses electricity or diesel or petrol.

$\frac{1}{8}$  of the cars use electricity.

25% of the cars use diesel.

The rest of the cars use petrol.

Work out the number of cars that use petrol.

You must show all your working.

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

- 4 (a) Work out  $1\frac{3}{5} + 2\frac{1}{4}$   
Give your answer as a mixed number.

(b) Show that  $2\frac{2}{3} \div 6 = \frac{4}{9}$

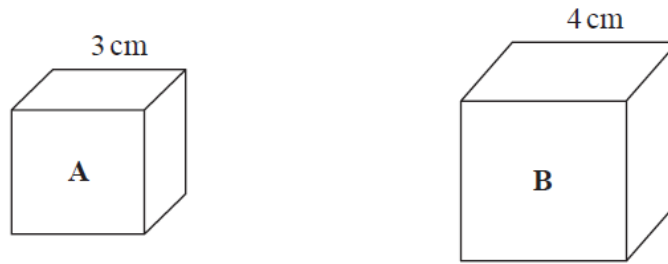
.....  
(2)

(2)

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

---

5 Here are two cubes, **A** and **B**.



Cube **A** has a mass of 81 g.

Cube **B** has a mass of 128 g.

Work out

the density of cube **A** : the density of cube **B**

Give your answer in the form  $a : b$ , where  $a$  and  $b$  are integers.

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

---

6 Solve the simultaneous equations

$$5x + 2y = 11$$

$$4x + 3y = 6$$

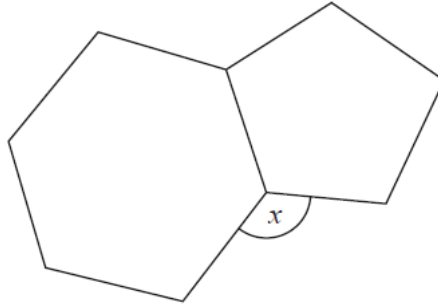
$x =$  .....

$y =$  .....

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

---

7 Here is a regular hexagon and a regular pentagon.

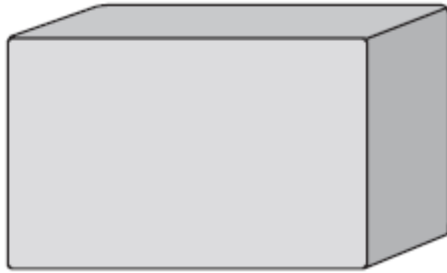


Work out the size of the angle marked  $x$ .  
You must show all your working.

.....<sup>o</sup>  
**(Total for Question 7 is 3 marks)**

---

8



$$\text{pressure} = \frac{\text{force}}{\text{area}}$$

A storage tank exerts a force of 10 000 newtons on the ground.  
The base of the tank in contact with the ground is a 4 m by 2 m rectangle.

Work out the pressure on the ground due to the tank.

..... newtons / m<sup>2</sup>

**(Total for Question 8 is 2 marks)**

---



9 Write 500 as a product of powers of its prime factors.

.....  
**(Total for Question 9 is 3 marks)**

---

10  $p$  is inversely proportional to  $t$

Complete the table of values.

$t$	100	25		2
$p$	1		5	

(Total for Question 10 is 3 marks)

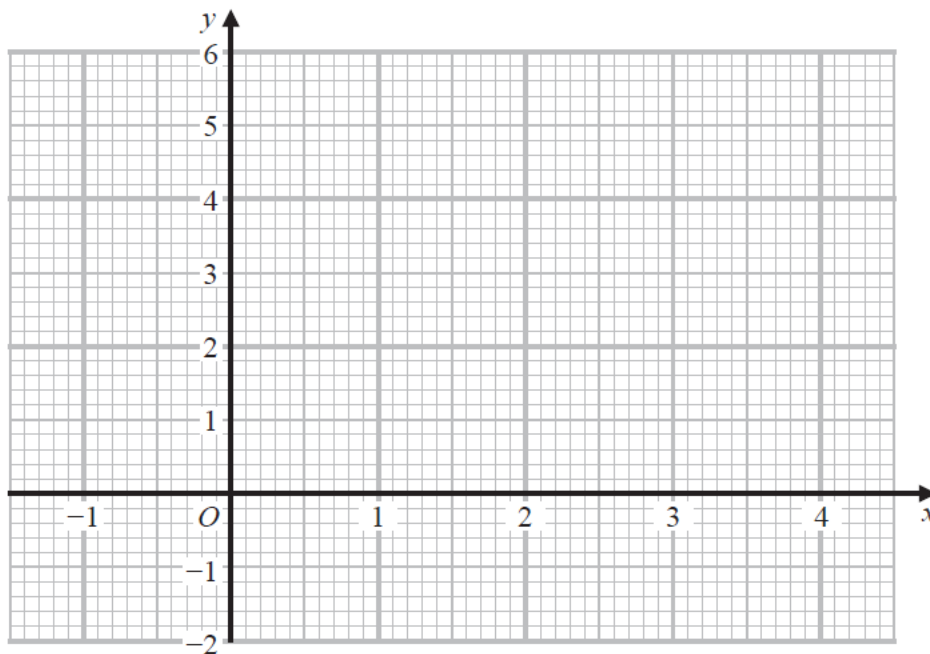
---

11 (a) Complete the table of values for  $y = x^2 - 3x + 1$

$x$	-1	0	1	2	3	4
$y$		1	-1			

(2)

(b) On the grid, draw the graph of  $y = x^2 - 3x + 1$  for values of  $x$  from -1 to 4



(2)

(c) Using your graph, find estimates for the solutions of the equation  $x^2 - 3x + 1 = 0$

.....  
(2)

**(Total for Question 11 is 6 marks)**

- 12 Express  $0.1\dot{1}\dot{7}$  as a fraction.  
You must show all your working.

.....  
**(Total for Question 12 is 3 marks)**

---

**13** (a) Write  $1.63 \times 10^{-3}$  as an ordinary number.

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

(b) Write 438 000 in standard form.

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

(c) Work out  $(4 \times 10^3) \times (6 \times 10^{-5})$   
Give your answer in standard form.

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

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

---

**14** Work out  $0.004 \times 0.32$

.....  
**(Total for Question 14 is 2 marks)**

---

- 15** A car factory is going to make four different car models **A**, **B**, **C** and **D**.  
80 people are asked which of the four models they would be most likely to buy.

The table shows information about the results.

<b>Car model</b>	<b>Number of people</b>
<b>A</b>	23
<b>B</b>	15
<b>C</b>	30
<b>D</b>	12

The factory is going to make 40 000 cars next year.

Work out how many model **B** cars the factory should make next year.

.....  
**(Total for Question 15 is 2 marks)**

---

16 Work out the value of  $\left(\frac{8}{27}\right)^{\frac{4}{3}}$

.....  
**(Total for Question 16 is 2 marks)**

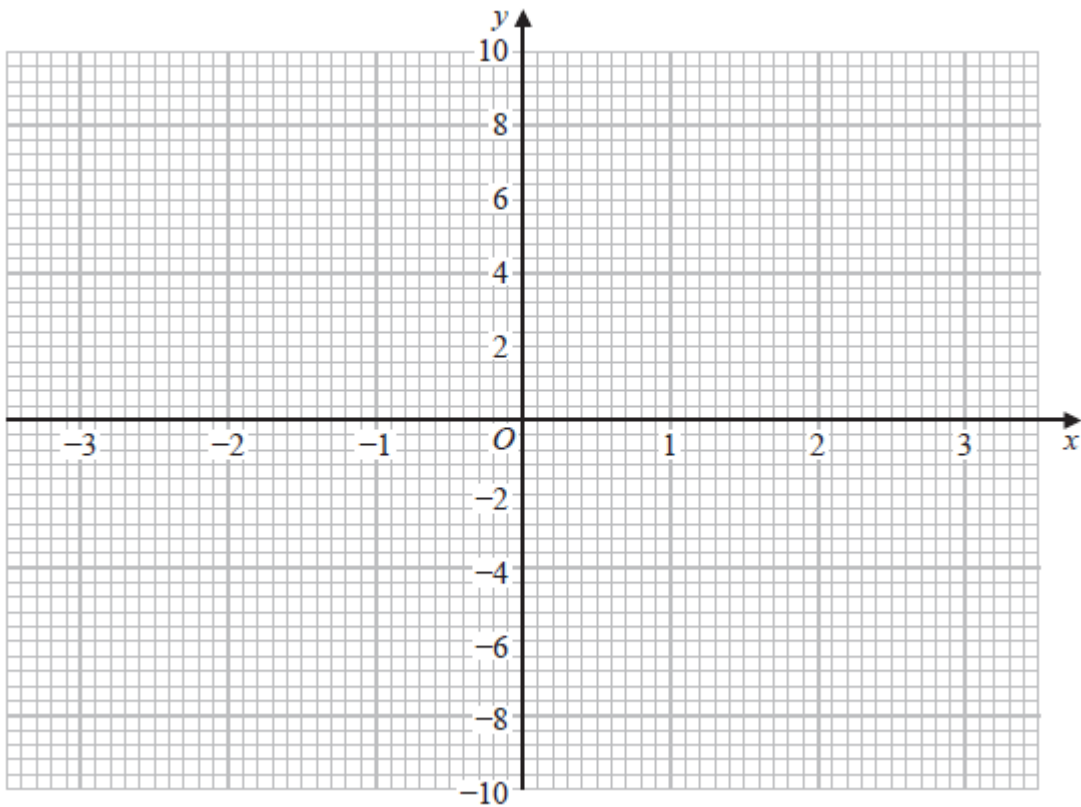
---

17 (a) Complete the table of values for  $y = 6x - x^3$

$x$	-3	-2	-1	0	1	2	3
$y$	9					4	-9

(2)

(b) On the grid, draw the graph of  $y = 6x - x^3$  for values of  $x$  from -3 to 3



(2)

(Total for Question 17 is 4 marks)



18 Rizwan writes down three numbers  $a$ ,  $b$  and  $c$

$$a : b = 1 : 3$$

$$b : c = 6 : 5$$

(a) (i) Find  $a : b : c$

.....  
(2)

(ii) Express  $a$  as a fraction of the total of the three numbers  $a$ ,  $b$  and  $c$

.....  
(2)

Emma writes down three numbers  $m$ ,  $n$  and  $p$

$$n = 2m$$

$$p = 5n$$

(b) Find  $m : p$

.....  
(2)

**(Total for Question 18 is 6 marks)**

---

19 Simplify  $(2^{-5} \times 2^8)^2$

Give your answer as a power of 2

.....  
**(Total for Question 19 is 2 marks)**

---

- 20 The table shows some information about the profit made each day at a cricket club on 100 days.

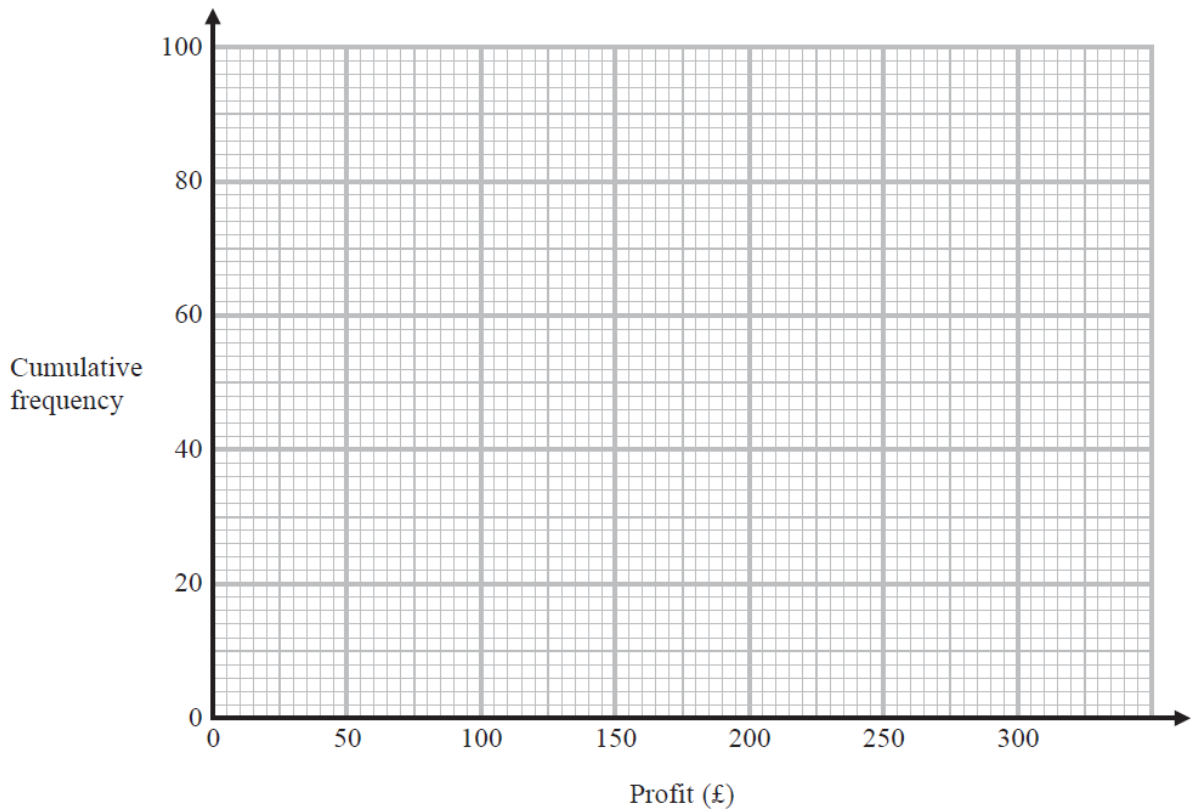
<b>Profit (£<math>x</math>)</b>	<b>Frequency</b>
$0 \leq x < 50$	10
$50 \leq x < 100$	15
$100 \leq x < 150$	25
$150 \leq x < 200$	30
$200 \leq x < 250$	5
$250 \leq x < 300$	15

- (a) Complete the cumulative frequency table.

<b>Profit (£<math>x</math>)</b>	<b>Cumulative frequency</b>
$0 \leq x < 50$	
$0 \leq x < 100$	
$0 \leq x < 150$	
$0 \leq x < 200$	
$0 \leq x < 250$	
$0 \leq x < 300$	

(1)

(b) On the grid, draw a cumulative frequency graph for this information.



(2)

(c) Use your graph to find an estimate for the number of days on which the profit was less than £125

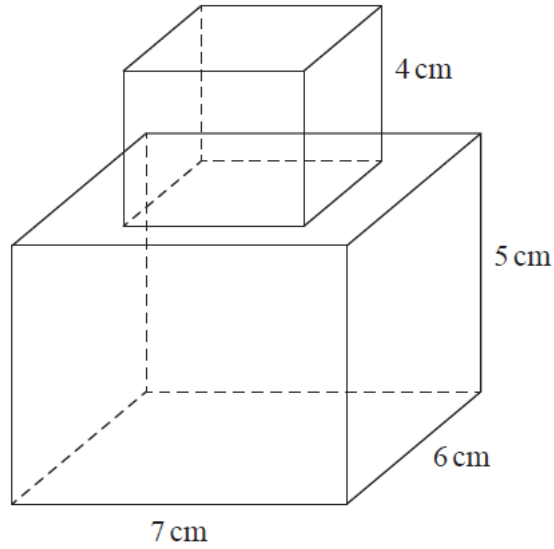
..... days  
(1)

(d) Use your graph to find an estimate for the interquartile range.

£.....  
(2)

**(Total for Question 20 is 6 marks)**

21 A cube is placed on top of a cuboid, as shown in the diagram, to form a solid.

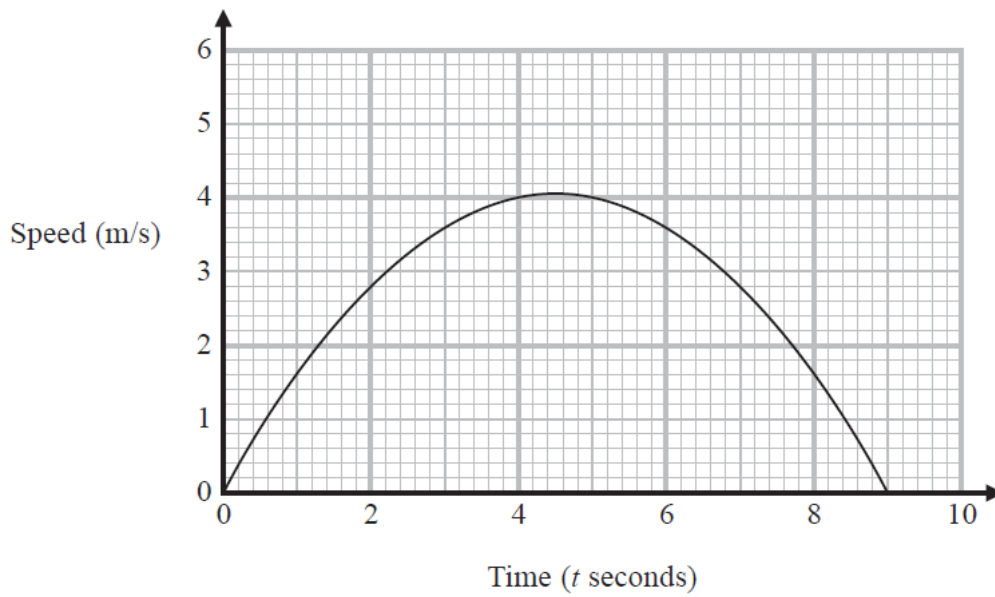


The cube has edges of length 4 cm.  
The cuboid has dimensions 7 cm by 6 cm by 5 cm.

Work out the total surface area of the solid.

..... cm<sup>2</sup>  
**(Total for Question 21 is 3 marks)**

22 Here is a speed-time graph.



(a) Work out an estimate of the gradient of the graph at  $t = 2$

.....  
(3)

(b) What does the area under the graph represent?

.....  
.....  
(1)

**(Total for Question 22 is 4 marks)**

23 Two numbers  $m$  and  $n$  are such that

$m$  is a multiple of 5

$n$  is an even number

the highest common factor (HCF) of  $m$  and  $n$  is 7

Write down a possible value for  $m$  and a possible value for  $n$ .

$m = \dots\dots\dots$

$n = \dots\dots\dots$

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

---

- 24 Cormac has some sweets in a bag.  
The sweets are lime flavoured or strawberry flavoured or orange flavoured.

In the bag

$$\begin{array}{l} \text{number of lime} \\ \text{flavoured sweets} \end{array} : \begin{array}{l} \text{number of strawberry} \\ \text{flavoured sweets} \end{array} : \begin{array}{l} \text{number of orange} \\ \text{flavoured sweets} \end{array} = 9 : 4 : x$$

Cormac is going to take at random a sweet from the bag.

The probability that he takes a lime flavoured sweet is  $\frac{3}{7}$

Work out the value of  $x$ .

$$x = \dots\dots\dots$$

**(Total for Question 24 is 3 marks)**

---

**TOTAL FOR PAPER IS 80 MARKS**