

Write your name here	
Surname	Other names
Centre Number	Candidate Number
Pearson Edexcel Level 1/Level 2 GCSE (9–1)	
Mathematics Paper 2 (Calculator) Aiming for 7	
Higher Tier	
Spring 2022 Practice Paper Time: 1 hour 30 minutes	Paper Reference 1MA1/2H
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 π button, take the value of π to be 3.142



unless the question instructs otherwise.

Information

- The total mark for this paper is 80. There are 22 questions.
- Questions have been arranged in an ascending order of mean difficulty, as found by all students in the November 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 TWO questions.

Write your answers in the spaces provided.

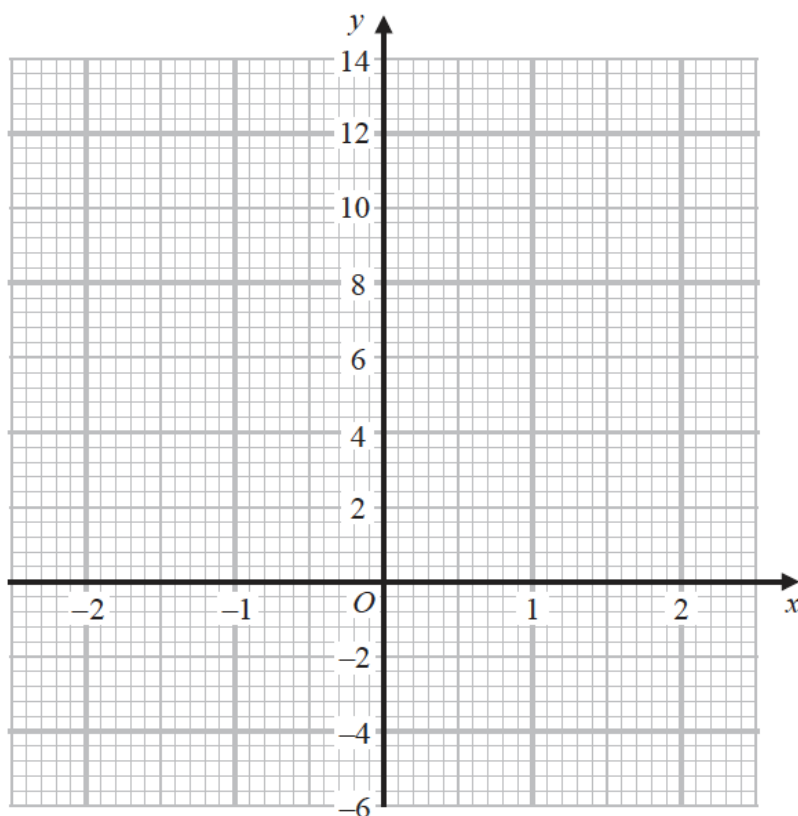
You must write down all the stages in your working.

- 1** (a) Complete the table of values for $y = 5 - x^3$

x	-2	-1	0	1	2
y		6			

(2)

- (b) On the grid below, draw the graph of $y = 5 - x^3$ for values of x from -2 to 2



(2)

(Total for Question 1 is 4 marks)

2 (a) Write 84 as a product of its prime factors.

.....
(2)

(b) Find the lowest common multiple (LCM) of 60 and 84

.....
(2)

(Total for Question 2 is 4 marks)

3 (a) Find the Highest Common Factor (HCF) of 60 and 84

.....
(2)

(b) Find the Lowest Common Multiple (LCM) of 24 and 40

.....
(2)

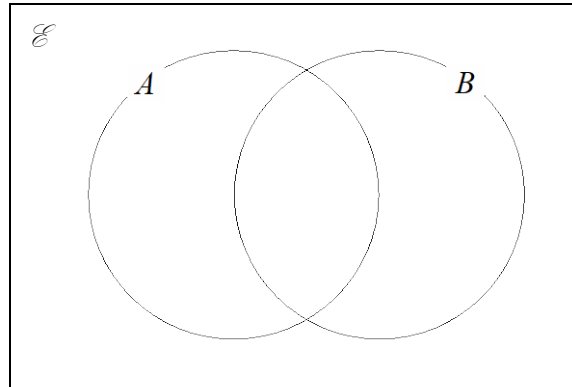
(Total for Question 3 is 4 marks)

4 $\mathcal{E} = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$

$A = \{\text{even numbers}\}$

$B = \{\text{factors of 10}\}$

(a) Complete the Venn diagram for this information.



(3)

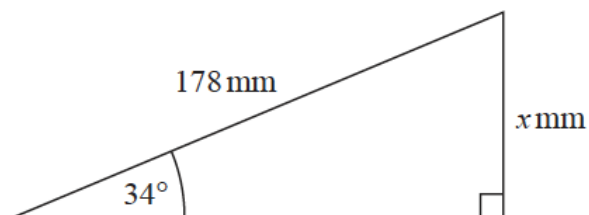
A number is chosen at random from the universal set, $\mathcal{E}$

(b) Find the probability that this number is in the set $A \cap B$

.....
(2)

(Total for Question 4 is 5 marks)

5

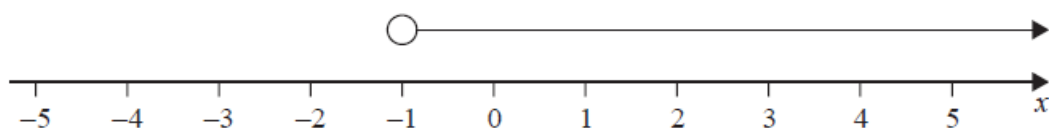


Work out the value of x .

Give your answer correct to 1 decimal place.

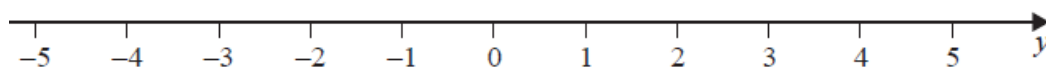
.....
(Total for Question 5 is 2 marks)

- 6 (a) Write down the inequality shown on this number line.



.....
(1)

- (b) On the number line below, show the inequality $-3 \leq y < 4$



(2)
(Total for Question 6 is 3 marks)

- 7 Jack is in a restaurant.
There are 5 starters, 8 main courses and some desserts on the menu.
Jack is going to choose one starter, one main course and one dessert.
He says there are 240 ways that he can choose his starter, his main course and his dessert.
Could Jack be correct?
You must show how you get your answer.

(Total for Question 7 is 2 marks)

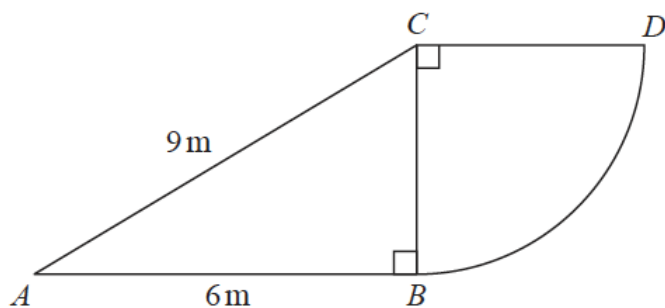
8 $\mathbf{a} = \begin{pmatrix} 3 \\ 4 \end{pmatrix}$ $\mathbf{b} = \begin{pmatrix} 5 \\ -2 \end{pmatrix}$

Find $2\mathbf{a} - 3\mathbf{b}$ as a column vector.

$$\begin{pmatrix} \\ \\ \end{pmatrix}$$

(Total for Question 8 is 2 marks)

- 9 The diagram shows a right-angled triangle and a quarter circle.



The right-angled triangle ABC has angle $ABC = 90^\circ$

The quarter circle has centre C and radius CB .

Work out the area of the quarter circle.

Give your answer correct to 3 significant figures.

You must show all your working.

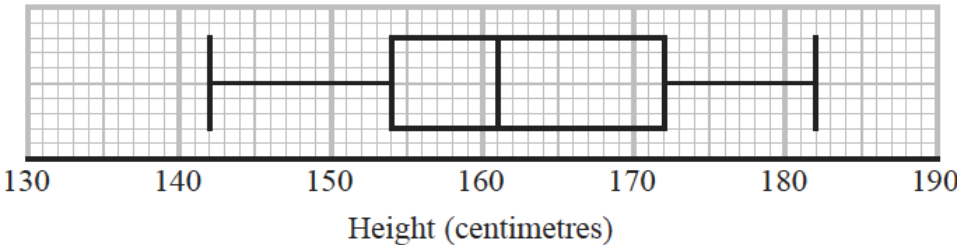
..... m^2

(Total for Question 9 is 4 marks)

- 10 Aisha recorded the heights, in centimetres, of some girls.
She used her results to work out the information in this table.

Least height	142 cm
Lower quartile	154 cm
Interquartile range	17 cm
Median	162 cm
Range	40 cm

Aisha drew this box plot for the information in the table.
The box plot is **not** fully correct.



Write down the two things Aisha should do to make the box plot fully correct.

- 1.....
-
-
- 2.....
-
-

(Total for Question 10 is 2 marks)

11 Tariq buys a laptop.

He gets a discount of 5% off the normal price.

Tariq pays £551 for the laptop.

(a) Work out the normal price of the laptop.

£.....
(2)

Joan invests £6000 in a savings account.

The savings account pays compound interest at a rate of

2.4% for the first year

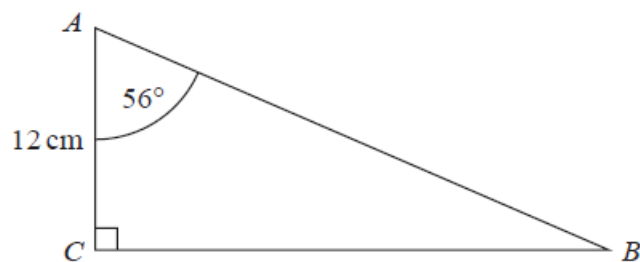
1.7% for each extra year.

(b) Work out the value of Joan's investment at the end of 3 years.

£.....
(3)

(Total for Question 11 is 5 marks)

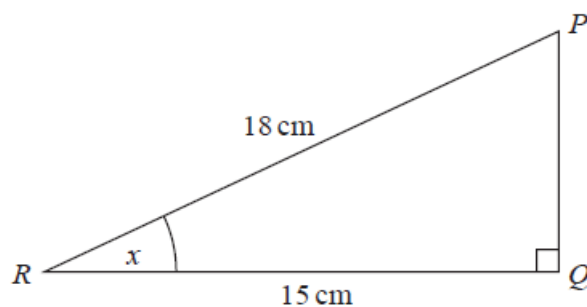
12 ABC is a right-angled triangle.



- (a) Work out the length of BC .
Give your answer correct to 1 decimal place.

..... cm
(2)

PQR is a right-angled triangle.



- (b) Work out the size of the angle marked x .
Give your answer correct to 1 decimal place.

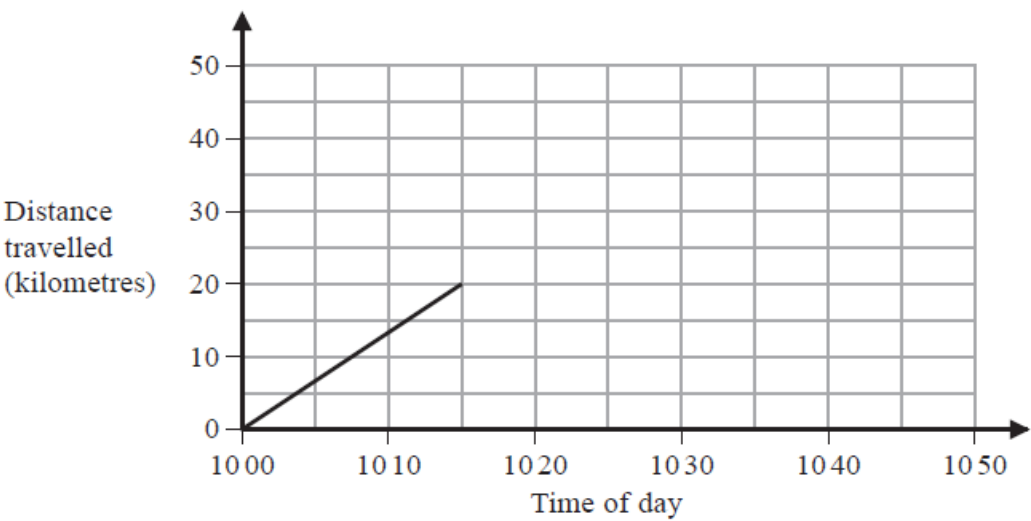
.....°
(2)

(Total for Question 12 is 4 marks)

13 Expand and simplify $(x - 2)(3x + 2)(2x + 3)$

.....
(Total for Question 13 is 3 marks)

- 14 Sam drives his car on a journey.
Here is the travel graph for the first 15 minutes of his journey.



- (a) Work out Sam’s speed, in km/h, for the first 15 minutes of his journey.

..... km/h
(2)

At 10 15 Sam stops for 10 minutes and then drives for 20 minutes at a speed of 75 km/h.

- (b) On the grid, complete the travel graph for Sam’s journey.
(3)

(Total for Question 14 is 5 marks)

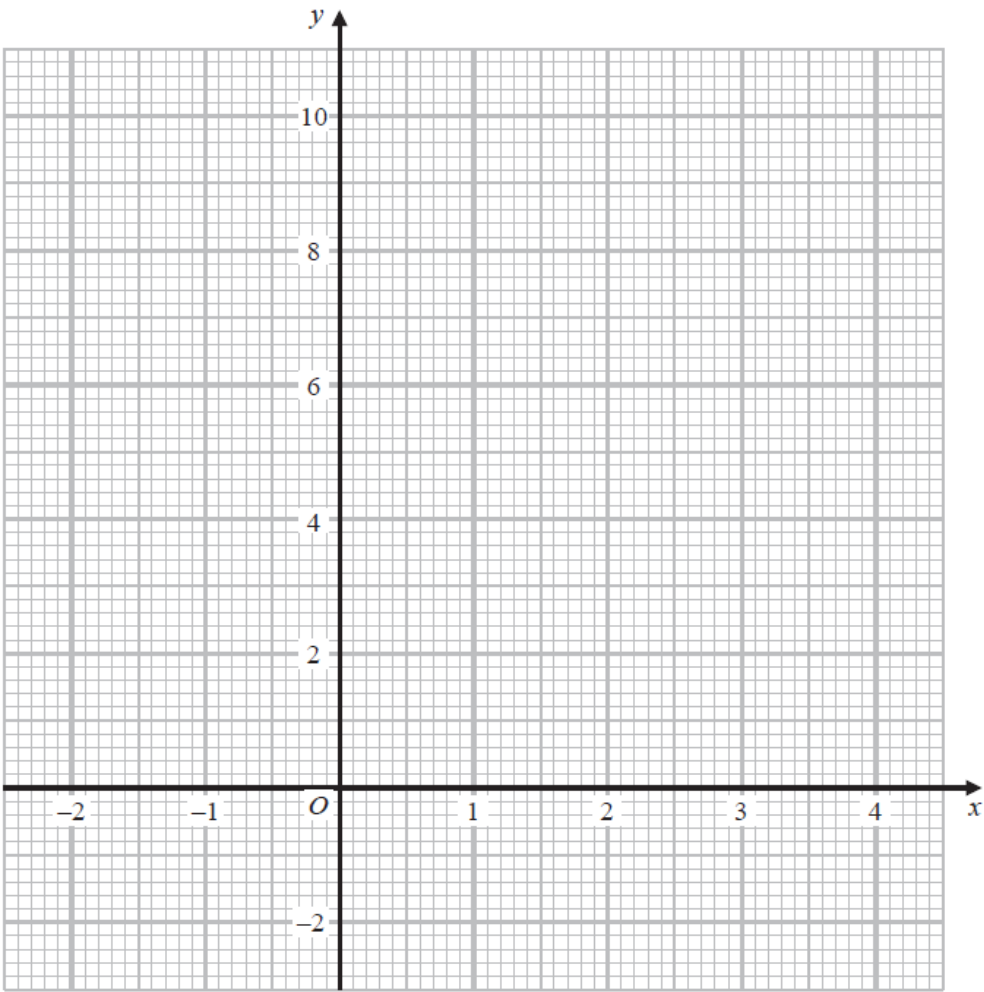
15 (a) Complete the table of values for $y = x^2 - 2x + 2$

x	-2	-1	0	1	2	3	4
y	10		2			5	

(2)

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

(2)



(c) Use your graph to find estimates of the solutions of the equation $x^2 - 2x + 2 = 4$

(2)

(Total for Question 15 is 6 marks)

16 Carlo puts tins into small boxes and into large boxes.

He puts 6 tins into each small box.

He puts 20 tins into each large box.

Carlo puts a total of 3000 tins into the boxes so that

number of tins in small boxes : number of tins in large boxes = 2 : 3

Carlo says that less than 30% of the boxes filled with tins are large boxes.

Is Carlo correct?

You must show all your working.

(Total for Question 16 is 5 marks)

17 (a) Simplify $\left(\frac{1}{m^2}\right)^0$

.....
(1)

(b) Simplify $\frac{8(x-4)}{(x-4)^2}$

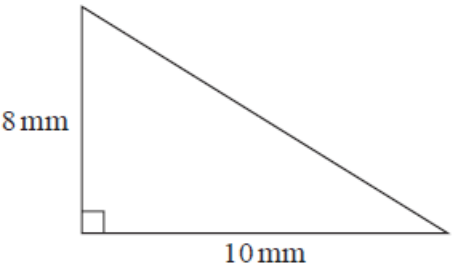
.....
(1)

(c) Simplify $(3n^4w^2)^3$

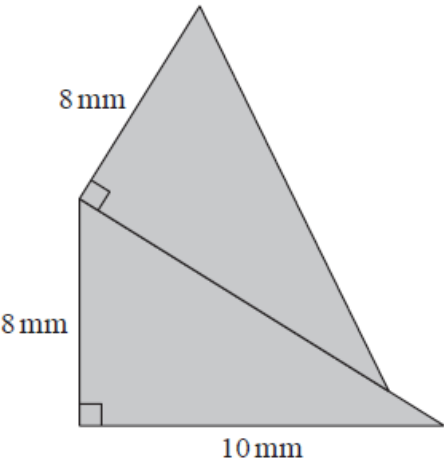
.....
(2)

(Total for Question 17 is 4 marks)

18 Here is a right-angled triangle.



The shaded shape below is made from two of these triangles.



Work out the perimeter of the shaded shape.
Give your answer correct to 3 significant figures.

..... mm
(Total for Question 18 is 4 marks)

- 19** Liquid **A** has a density of 1.8 g/cm^3
Liquid **B** has a density of 1.2 g/cm^3

80 cm^3 of liquid **A** is mixed with 40 cm^3 of liquid **B** to make 120 cm^3 of liquid **C**.

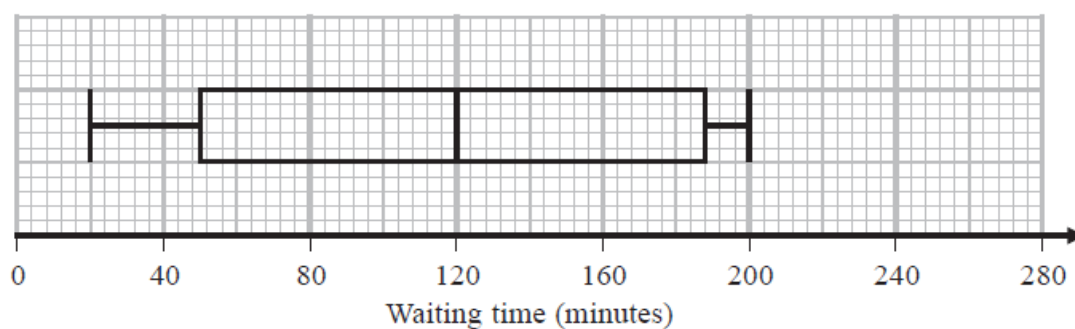
Work out the density of liquid **C**.

..... g/cm^3

(Total for Question 19 is 3 marks)

TURN OVER FOR QUESTION 20

20 The box plot shows information about the length of time, in minutes, some people waited to see a doctor at a hospital on Monday.



(a) Work out the interquartile range of the information in the box plot.

s..... minutes
(2)

Becky says,

“50% of the people waited for at least 2 hours.”

(b) Is Becky correct?

Explain why.

.....

 (1)

The table gives information about the length of time, in minutes, some people waited to see a doctor at the same hospital on Tuesday.

	Waiting time (minutes)
Shortest time	20
Lower quartile	50
Median	100
Upper quartile	140
Longest time	210

Becky was asked to compare the distribution of the lengths of times people waited on Monday with the distribution of the lengths of times people waited on Tuesday. She wrote,

“People had to wait longer on Tuesday than on Monday.”

(c) Give **one** reason why Becky may be wrong.

.....

.....

.....

(1)

(Total for Question 20 is 4 marks)

- 21 Here are the first five terms of a quadratic sequence.

10 21 38 61 90

Find an expression, in terms of n , for the n th term of this sequence.

.....
(Total for Question 21 is 3 marks)

-
- 22 In a school there are 16 teachers and 220 students.
Of these students 120 are girls and 100 are boys.

One teacher, one girl and one boy are going to be chosen to represent the school.

Work out the number of different ways there are to choose one teacher, one girl and one boy.

.....
(Total for Question 22 is 2 marks)

TOTAL FOR PAPER IS 80 MARKS