

Paper Reference 1MA1/1F
Pearson Edexcel
Level 1/Level 2 GCSE (9–1)

Total Marks

Mathematics
PAPER 1 (Non-Calculator)
Foundation Tier

Wednesday 8 November 2023 – Morning

Time: 1 hour 30 minutes

**In the boxes below, write your name,
centre number and candidate number.**

Surname					
Other names					
Centre Number					
Candidate Number					

YOU MUST HAVE

Ruler, protractor, compasses, writing and drawing equipment, Formulae Sheet (enclosed). Tracing paper may be used.

YOU WILL BE GIVEN

Diagram Booklet

INSTRUCTIONS

Answer ALL questions.

Answer the questions in the spaces provided in this Question Paper or on the separate diagrams – 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

The marks for EACH question are shown in brackets – use this as a guide as to how much time to spend on each question.

You may be provided with cutout shapes for Question 11.

There may be spare copies of some diagrams in case you need them.

ADVICE

Read each question carefully before you start to answer it.

Try to answer every question.

Check your answers if you have time at the end.

5

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

Turn over

6

1. Here is a list of five numbers.

2 4 4 7 8

Work out the range of these numbers.

(Total for Question 1 is 1 mark)

Turn over

- 2. Work out**
120 – 89

(Total for Question 2 is 1 mark)

Turn over

3. Simplify

$$3 \times p \times 4$$

(Total for Question 3 is 1 mark)

Turn over

4. Look at the diagram for Question 4 in the Diagram Booklet.

It shows an angle marked **X**

Measure the size of the angle marked **X**



(Total for Question 4 is 1 mark)

5. Work out
 $\frac{1}{5}$ of 300

(Total for Question 5 is 1 mark)

Turn over

6. There are **3** litres of oil in a can.
Jermaine uses **700** millilitres of the oil.

Work out the amount of oil left in the can.

Give your answer in millilitres.

(3 marks)

Answer space continues on the next two pages.

6. continued.

Turn over

6. continued.

_____ millilitres

(Total for Question 6 is 3 marks)

Turn over

7. Matt is drawing a scale diagram.

1 cm represents 5 metres.

He draws a line 3 cm long.

(a) What real distance does the line represent?

(1 mark)

_____ metres

(continued on the next page)

Turn over

7. continued.

**Remember: 1 cm represents
5 metres**

**The real distance between two points
is 20 metres.**

**(b) What is the distance between the
two points on the scale diagram?
(1 mark)**

**Answer space continues on the
next page.**

7. (b) continued.

_____ cm

(Total for Question 7 is 2 marks)

Turn over

- 8. Look at the information for Question 8 in the Diagram Booklet. Miss Bailey asked 24 students where they each wanted to go on a school trip.**

The results are shown in the Diagram Booklet.

(continued on the next page)

8. continued.

(a) Complete the frequency table below.

There are six spaces to fill.

(2 marks)

There is a spare copy of this table on page 13 of the Diagram Booklet if you wish to use it.

Place	Tally	Frequency
castle (C)		
farm (F)		
museum (M)		

(continued on the next page)

Turn over

8. continued.

(b) Write down the place that is the mode.

(1 mark)

(c) Look at the diagram for Question 8(c) in the Diagram Booklet.

It shows a grid.

Draw a bar chart on the grid in the Diagram Booklet to show the results.

(3 marks)

Space for working is on the next page.

Turn over

8. (c) continued.

(Total for Question 8 is 6 marks)

Turn over

- 9. Look at the information for Question 9 in the Diagram Booklet. Selina has a bag of 22 counters.**

Selina takes at random a counter from the bag.

(continued on the next page)

9. continued.

Write down the probability that Selina

- (i) takes a red counter,
(1 mark)**

(continued on the next page)

Turn over

9. continued.

Write down the probability that Selina

**(ii) does NOT take a pink counter,
(1 mark)**

(continued on the next page)

Turn over

9. continued.

Write down the probability that Selina

(iii) takes a white counter.

(1 mark)

(Total for Question 9 is 3 marks)

Turn over

- 10. Look at the information for Question 10 in the Diagram Booklet. It shows the ingredients needed to make 20 peanut butter cookies.**

Derek wants to make 60 cookies.

He has 900 grams of peanut butter.

Does Derek have enough peanut butter to make 60 cookies?

You must show how you get your answer.

(3 marks)

Answer space is on the next two pages.

Turn over

10. continued.

Turn over

10. continued.

(Total for Question 10 is 3 marks)

Turn over

11. Look at the diagram for Question 11 in the Diagram Booklet.

It shows a triangle P and triangle Q on a grid.

Describe fully the single transformation that maps triangle P onto triangle Q

Two cutout shapes may be available if you wish to use them.

(Total for Question 11 is 2 marks)

12. Given that

$$\mathbf{P = 2m + 4n}$$

**(a) (i) work out the value of P when
 $m = 3$ and $n = 5$**

(2 marks)

**Answer space continues on
the next page.**

12. (a) (i) continued.

$P =$ _____

(continued on the next page)

Turn over

12. (a) continued.

Given that

$$\mathbf{P = 2m + 4n}$$

(ii) work out the value of m

when $P = 38$ and $n = 3$

(2 marks)

**Answer space continues on
the next page.**

12. (a) (ii) continued.

$m =$ _____

(continued on the next page)

Turn over

12. continued.

Given that

$$\mathbf{V = 3r - q}$$

**(b) work out the value of V when
 $r = -3$ and $q = 2$**

(2 marks)

**Answer space continues on the
next page.**

12. (b) continued.

$$V = \underline{\hspace{10cm}}$$

(Total for Question 12 is 6 marks)

Turn over

13. Chloe is making scrunchies.

**Chloe has a large number of
hair bands.**

Each hair band costs 8 pence.

She buys 100 grams of wool for £3

**Chloe uses 1 hair band and 5 grams
of wool to make each scrunchy.**

**She makes as many scrunchies as
she can.**

(continued on the next page)

13. continued.

**Work out the total cost of each
scrunchy that she makes.**

Give your answer in pence.

(4 marks)

**Answer space continues on the next
page.**

13. continued.

_____ pence

(Total for Question 13 is 4 marks)

Turn over

- 14. Look at the diagram for Question 14 in the Diagram Booklet.**

It shows a grid.

On the grid, draw the graph of

$y = 4x - 1$ for values of x from -2 to 2

(Total for Question 14 is 3 marks)

Turn over

15. Steve is buying a car.

The car costs £12 000

Steve pays 25% of the cost as a deposit.

He pays the rest of the cost in 20 equal monthly payments.

**How much is each monthly payment?
(4 marks)**

Answer space continues on the next page.

15. continued.

£ _____

(Total for Question 15 is 4 marks)

Turn over

16. Shah takes an exam.

The exam is out of 60 marks.

**Shah needs to score at least 70% of
the marks to pass the exam.**

He scores 45 marks.

Show that Shah passes the exam.

(2 marks)

**Answer space continues on the next
page.**

16. continued.

(Total for Question 16 is 2 marks)

Turn over

17. Work out

$$\frac{3}{5} \div \frac{1}{6}$$

Give your answer as a mixed number.

(Total for Question 17 is 3 marks)

Turn over

18. Work out

$$6 \cdot 3 \times 2 \cdot 4$$

(3 marks)

**Answer space continues on the next
two pages.**

Turn over

18. continued.

Turn over

18. continued.

(Total for Question 18 is 3 marks)

Turn over

19. (a) (i) Write down the value of 5^0

(1 mark)

(continued on the next page)

19. (a) continued.

(ii) Write down the value of

$$5^{-2}$$

(1 mark)

(continued on the next page)

Turn over

19. continued.

(b) Write

$$\frac{2^5 \times 2^4}{2^3} \text{ in the form } 2^n \text{ where } n$$

is an integer.

(2 marks)

(Total for Question 19 is 4 marks)

Turn over

20. (a) Write 156 as a product of its prime factors.

(2 marks)

Answer space continues on the next page.

20. (a) continued.

(continued on the next page)

Turn over

20. continued.

- (b) Find the highest common factor
(HCF) of 156 and 130
(2 marks)**

**Answer space continues on the
next page.**

20. (b) continued.

(Total for Question 20 is 4 marks)

Turn over

21. The mean length of 5 sticks is 4.2 cm

Nawal measured the length of one of the sticks as 7 cm

- (a) Work out the mean length of the other 4 sticks.

(3 marks)

Answer space continues on the next page.

21. (a) continued.

_____ cm

(continued on the next page)

Turn over

21. continued.

Remember:

**The mean length of 5 sticks is
4.2 cm**

**Nawal measured the length of one of
the sticks as 7 cm**

(continued on the next page)

Turn over

21. continued.

(b) Nawal made a mistake.

The stick was not 7 cm long.

It was 17 cm long.

**How does this affect your answer
to part (a)?**

(1 mark)

(Total for Question 21 is 4 marks)

Turn over

22. Look at the diagram for Question 22 in the Diagram Booklet.

It shows point P on the line AB

Use ruler and compasses to

construct an angle of 90° at P

You must show all your construction lines.

(Total for Question 22 is 2 marks)

23. Look at the diagram for Question 23 in the Diagram Booklet.

It shows an isosceles triangle ABD and the straight line ABC

$$\text{Angle DAB} = x^\circ$$

$$\text{Angle DBA} = y^\circ$$

$$\text{Angle DBC} = w^\circ$$

$$BA = BD$$

$$x : y = 2 : 1$$

Work out the value of w

(4 marks)

Answer space is on the next two pages.

Turn over

23. continued.

Turn over

23. continued.

W = _____

(Total for Question 23 is 4 marks)

Turn over

24. Mano has three shelves of books.

There are y books on shelf **A**

There are $(3y + 1)$ books on shelf **B**

There are $(2y - 5)$ books on shelf **C**

There is a total of **44 books on the three shelves.**

All the books have the same mass.

The books on shelf **B have a total mass of **7500** grams.**

(continued on the next page)

Turn over

24. continued.

**Work out the total mass of the books
on shelf A**

(5 marks)

**Answer space continues on the next
two pages.**

Turn over

24. continued.

Turn over

24. continued.

_____ grams

(Total for Question 24 is 5 marks)

Turn over

25. A piece of glass has a mass of 27 grams and a volume of 10 cm^3

Work out the density of the piece of glass.

_____ g/cm^3

(Total for Question 25 is 2 marks)

Turn over

26. Work out an estimate for

$$\frac{5.7 \times 8.2}{0.26}$$

(3 marks)

Answer space continues on the next page.

26. continued.

(Total for Question 26 is 3 marks)

Turn over

27. (a) Expand and simplify

$$(3y + 2)(2y - 5)$$

(2 marks)

(continued on the next page)

Turn over

27. continued.

(b) Factorise

$$y^2 - 16$$

(1 mark)

(Total for Question 27 is 3 marks)

TOTAL FOR PAPER IS 80 MARKS

END OF PAPER
