

Paper Reference 4MA1/2F
Pearson Edexcel
International GCSE

Total Marks

Mathematics A
PAPER 2F
Foundation Tier
(Calculator)

Time: 2 hours plus your additional time allowance

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, calculator. Tracing paper may be used.

YOU WILL BE GIVEN

**Diagram Booklet
Formulae Pages**

INSTRUCTIONS

Answer ALL questions.

Without sufficient working, correct answers may be awarded no marks.

Answer the questions in the spaces provided in this Question Paper or on the separate diagrams – there may be more space than you need.

CALCULATORS MAY BE USED.

You must NOT write anything on the Formulae Pages. Anything you write on the Formulae Pages will gain NO credit.

INFORMATION

The total mark for this paper is 100

**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 six shapes for Question 6

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

ADVICE

**Read each question carefully before you start to
answer it.**

Check your answers if you have time at the end.

Answer ALL TWENTY SIX questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1. Look at the diagram for Question 1(a) in the Diagram Booklet.

It shows a square and its diagonals.

- (a) Shade $\frac{1}{4}$ of the square in the Diagram Booklet.

(1 mark)

Look at the diagram for Question 1(b) in the Diagram Booklet.

It shows a rhombus.

- (b) What fraction of the rhombus is shaded?

(1 mark)

(continued on the next page)

1. continued.

(c) Write 0.9 as a fraction.

(1 mark)

(Total for Question 1 is 3 marks)

2. Below is a list of seven numbers.

3 8 9 14 23 28 30

(a) From the numbers in the list, write down

(i) a cube number

(1 mark)

(ii) a factor of 70

(1 mark)

(continued on the next page)

2. (a) continued.

Remember:

The list of seven numbers is:

3 8 9 14 23 28 30

From the numbers in the list, write down

(iii) a multiple of 6

(1 mark)

(iv) a prime number.

(1 mark)

(continued on the next page)

2. continued.

**Look at the diagram for Question 2(b) in the
Diagram Booklet.**

It shows a number machine.

**(b) Work out the input when the output is 108
(2 marks)**

(Total for Question 2 is 6 marks)

3. Look at the diagram for Question 3 in the Diagram Booklet.

It shows a fair 8-sided spinner.

Hollie is going to spin the spinner once.

impossible

unlikely

evens

likely

certain

- (a) Write down the word from the list above that best describes the likelihood that the spinner will land on

(i) yellow

(1 mark)

(continued on the next page)

Turn over

3. (a) continued.

Remember:

Hollie is going to spin the spinner once.

impossible

unlikely

evens

likely

certain

**Write down the word from the list above that
best describes the likelihood that the spinner
will land on**

(ii) red.

(1 mark)

(continued on the next page)

Turn over

3. continued.

**Look at the diagram for Question 3(b) in the
Diagram Booklet.**

It shows a probability scale.

**(b) On the probability scale, mark the probability
that the spinner will land on blue.**

(1 mark)

(Total for Question 3 is 3 marks)

- 4. Look at the table for Question 4 in the Diagram Booklet.**

It shows the maximum recorded temperature and the minimum recorded temperature on one day in each of four countries.

- (a) Which country has the highest maximum recorded temperature?**

(1 mark)

(continued on the next page)

4. continued.

- (b) Work out the difference between the maximum recorded temperature in Finland and the minimum recorded temperature in Finland.

(1 mark)

_____ °C

(continued on the next page)

4. continued.

On the same day, the minimum recorded temperature in Japan is 15°C lower than the minimum recorded temperature in Morocco.

(c) Work out the minimum recorded temperature in Japan.

(1 mark)

_____ $^{\circ}\text{C}$

(Total for Question 4 is 3 marks)

5. Look at the diagram for Question 5 in the Diagram Booklet.

It shows points **A** and **B** marked on a grid of squares.

- (a) On the grid in the Diagram Booklet, draw the line with equation $y = -2$
(1 mark)

M is the midpoint of **AB**

- (b) Find the coordinates of **M**
(2 marks)

(_____ , _____)

(continued on the next page)

5. continued.

D is the point with coordinates **(5, d)** where $d > 0$

The triangle **ABD** is an isosceles triangle.

(c) Find the value of **d**

(1 mark)

d = _____

(Total for Question 5 is 4 marks)

6. Look at the diagram for Question 6 in the Diagram Booklet.

It shows six shapes drawn on a grid of squares.

The shapes are labelled **A**, **B**, **C**, **D**, **E** and **F**

Six cut out shapes may be available if you wish to use them.

Shape **B** is a quadrilateral.

- (a) What is the mathematical name of this quadrilateral?

(1 mark)

One of the shapes is congruent to shape **E**

- (b) Write down the letter of this shape.

(1 mark)

(continued on the next page)

Turn over

6. continued.

(c) Write down the order of rotational symmetry of shape F

(1 mark)

(d) How many lines of symmetry has shape C?

(1 mark)

(Total for Question 6 is 4 marks)

7. $\frac{3}{8}$ of the members of a squash club are children.

$\frac{5}{6}$ of these children are right-handed.

What fraction of the members of the squash club are right-handed children?

Give your answer as a fraction in its simplest form.

Show your working clearly.

(3 marks)

Answer space continues on the next page.

7. continued.

(Total for Question 7 is 3 marks)

8. By writing each value correct to one significant figure, work out an estimate for the value of

$$\frac{8.23 \times 181}{0.482}$$

Show your working clearly.

(Total for Question 8 is 3 marks)

9. Look at the diagram for Question 9 in the Diagram Booklet.

It is NOT accurately drawn.

It shows triangle **ABD** with side **AD** extended to point **F**, side **BD** extended to point **E** and side **AB** extended to point **C**

ABC, **BDE** and **ADF** are straight lines.

angle **CBD** = 132°

angle **ADB** = 58°

angle **EDF** = x°

angle **DAB** = y°

- (a) (i) Write down the value of **x**

x = _____

(continued on the next page)

9. (a) continued.

(ii) Give a reason for your answer.

(2 marks)

(b) Work out the value of y

(2 marks)

$y =$ _____

(Total for Question 9 is 4 marks)

10. In a library there are two trolleys of books.

On trolley 1 the subjects of the books are
Buildings (B), Rivers (R) and Space (S)

On trolley 2 the subjects of the books are
Buildings (B), History (H) and Animals (A)

Tomos takes one book from trolley 1 and one book
from trolley 2

Write down all the possible combinations of
subjects that Tomos can take.

(2 marks)

Answer space and lines continue on the next page.

10. continued.

(Total for Question 10 is 2 marks)

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

It shows a sequence of patterns made from counters.

- (a) In the space below Pattern number 3, complete Pattern number 4**
(1 mark)

Look at the table for Question 11(b) in the Diagram Booklet.

- (b) Complete the table in the Diagram Booklet.**
There are two spaces to fill.
(1 mark)

(continued on the next page)

11. continued.

(c) Work out the number of counters in
Pattern number 10

(1 mark)

(continued on the next page)

11. continued.

Sven has exactly **70** counters.

(d) Can Sven make Pattern number **25** using his **70** counters?

Mark the appropriate box below.

Yes ☐

No ☐

Give a reason for your answer.

(1 mark)

(Total for Question 11 is 4 marks)

Turn over

12. Look at the diagram for Question 12 in the Diagram Booklet.

It is NOT accurately drawn.

It shows a box **B and a carton **C****

The box **B is in the shape of a cuboid.**

It has length **60 cm, width **20 cm** and height **24 cm****

Each carton **C is in the shape of an **8 cm** cube.**

Martha is going to put as many of the cartons as possible into the box.

She has enough cartons to do this.

Martha will then fill the remaining space inside the box with packing material.

Work out the volume of the space inside the box that Martha will fill with packing material.

(5 marks)

Answer space is on the next two pages.

12. continued.

12. continued.

_____ cm^3

(Total for Question 12 is 5 marks)

13. Look at the diagram for Question 13 in the Diagram Booklet.

It shows a conversion graph to change between Canadian dollars and pounds (£)

(a) Use the graph to change

(i) 45 Canadian dollars to pounds (£)

£ _____

(ii) £10 to Canadian dollars.

(2 marks)

_____ Canadian dollars

(continued on the next page)

13. continued.

Alana is on holiday in London and is going to Paris.

She is going to book a hotel in Paris.

She knows that

1 pound (£) = 1.2 euros

(b) Change 528 euros to Canadian dollars.

(3 marks)

_____ **Canadian dollars**

(Total for Question 13 is 5 marks)

Turn over

14. Iman walked for 3 hours 15 minutes.
He walked a distance of 18·2 kilometres.

Work out Iman's average speed for his walk.
Give your answer in km/h

_____ km/h

(Total for Question 14 is 3 marks)

15. Look at the information for Question 15 in the Diagram Booklet.

It shows a list of the ingredients needed to make 12 chocolate brownies.

Thalia buys exactly enough of these ingredients to make 120 of these brownies.

1.5 kg of flour costs £1.30

500 grams of chocolate spread costs £2.60

6 eggs cost £1.10

Thalia sells all 120 brownies at £0.40 each.

Work out the profit that she makes.

(5 marks)

Answer space continues on the next two pages.

15. continued.

15. continued.

£ _____

(Total for Question 15 is 5 marks)

16. (a) Expand and simplify

$$n(2n - 3) + 7(2n + 1) - 5$$

(3 marks)

(continued on the next page)

16. continued.

(b) Expand and simplify

$$(y + 4)(2 - y)$$

(2 marks)

(continued on the next page)

16. continued.

(c) Factorise fully

$$15p^5q - 35p^3q^9$$

(2 marks)

(Total for Question 16 is 7 marks)

17. Show that

$$6\frac{3}{4} \div 2\frac{4}{7} = 2\frac{5}{8}$$

(3 marks)

Answer space continues on the next page.

17. continued.

(Total for Question 17 is 3 marks)

18. Look at the diagram for Question 18 in the Diagram Booklet.

It is NOT accurately drawn.

It shows triangle **ABC** and triangle **PQR**

Triangle **ABC** is similar to triangle **PQR**

$$AB = 4 \text{ cm}$$

$$PQ = 12 \text{ cm}$$

$$RQ = 16.5 \text{ cm}$$

$$AC = x \text{ cm}$$

$$PR = y \text{ cm}$$

$$\text{angle } BAC = \text{angle } QPR$$

$$\text{angle } ACB = \text{angle } PRQ$$

(continued on the next page)

18. continued.

- (a) Calculate the length of **BC**
(2 marks)

_____ cm

(continued on the next page)

18. continued.

- (b) Write down an expression for y in terms of x
(1 mark)

$y =$ _____

(Total for Question 18 is 3 marks)

19. Look at the diagram for Question 19 in the Diagram Booklet.

It is NOT accurately drawn.

It shows a regular octagon.

Each side of the regular octagon has a length of 18 mm, correct to the nearest 0.5 mm

(a) Write down the lower bound of the length of each side of the octagon.

(1 mark)

_____ mm

(continued on the next page)

19. continued.

(b) Write down the upper bound of the length of each side of the octagon.

(1 mark)

_____ mm

(Total for Question 19 is 2 marks)

20. Look at the scale diagram for Question 20 in the Diagram Booklet.

It shows the position on a map of a house, A

House C is on a bearing of 110° from A

The distance from A to C is 900 metres.

(a) Mark the position of C on the diagram in the Diagram Booklet.

(3 marks)

(continued on the next page)

20. continued.

- (b) Write the scale of the map in the form 1 : n
(1 mark)**

1 : _____

(Total for Question 20 is 4 marks)

21. Look at the table for Question 21 in the Diagram Booklet.

A bag contains only pink sweets, white sweets, green sweets and red sweets.

The table in the Diagram Booklet gives each of the probabilities that, when a sweet is taken at random from the bag, the sweet will be green or the sweet will be red.

The ratio

**number of pink sweets : number of white sweets =
2 : 1**

There are 28 red sweets in the bag.

Work out the number of white sweets in the bag.

(5 marks)

Answer space continues on the next two pages.

21. continued.

21. continued.

(Total for Question 21 is 5 marks)

- 22. Find the lowest common multiple (LCM) of
28, 42 and 63**

Show your working clearly.

(3 marks)

Answer space continues on the next page.

22. continued.

(Total for Question 22 is 3 marks)

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

It gives information about the average house price in England in 2018 and in 2019

- (a) Work out the percentage increase in the average house price from 2018 to 2019**
Give your answer correct to one decimal place.
(2 marks)

_____ %

(continued on the next page)

Turn over

23. continued.

The average house price in 2019 was 7.7% greater than the average house price in 2017

(b) Work out the average house price in 2017

Give your answer correct to

3 significant figures.

(3 marks)

Answer space continues on the next page.

23. (b) continued.

£ _____

(Total for Question 23 is 5 marks)

24. Look at the frequency table for Question 24 in the Diagram Booklet.

It gives information about the number of points scored by a player.

The mean number of points scored is 2

Work out the value of x

(4 marks)

Answer space continues on the next page.

24. continued.

X = _____

(Total for Question 24 is 4 marks)

Turn over

25. Solve the simultaneous equations

$$3x + 5y = 3 \cdot 1$$

$$6x + 3y = 3 \cdot 75$$

Show clear algebraic working.

(3 marks)

Answer space continues on the next page.

25. continued.

$x =$ _____

$y =$ _____

(Total for Question 25 is 3 marks)

Turn over

26. Look at the diagram for Question 26 in the Diagram Booklet.

It is NOT accurately drawn.

It shows a regular 10-sided polygon,

ABCDEFGHIJ

angle **JAG** = x°

angle **GAD** = y°

Show that **$x = y$**

(4 marks)

Answer space continues on the next page.

26. continued.

(Total for Question 26 is 4 marks)

TOTAL FOR PAPER IS 100 MARKS

END OF PAPER
