

**Paper Reference 4MA1/2FR**  
**Pearson Edexcel**  
**International GCSE**

Total Marks

**Mathematics A**  
**PAPER: 2FR**  
**Foundation Tier**  
**(Calculator)**

**Time: 2 hours**

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

<b>Surname</b>					
<b>Other names</b>					
<b>Centre Number</b>					
<b>Candidate Number</b>					

**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.

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

You may be provided with a model for Question 4(b)

## **ADVICE**

Read each question carefully before you start to answer it.

Check your answers if you have time at the end.

---

**Answer ALL TWENTY SEVEN questions.**

**Write your answers in the spaces provided.**

**You must write down all the stages in your working.**

1. (a) Write the five numbers below in order of size.  
Start with the smallest number.  
(1 mark)

202      58      123      7      180

---

---

(continued on the next page)

1. continued.

(b) Write the five numbers below in order of size.

Start with the smallest number.

(1 mark)

0.155

1.5

0.15

0.015

1.15

---

---

(continued on the next page)

1. continued.

(c) Write in figures the number five thousand two hundred and three.

(1 mark)

---

(d) Write down the value of the **6** in the number **2468**

(1 mark)

---

(Total for Question 1 is 4 marks)

---

2. Look at the diagram for Question 2 in the Diagram Booklet.

It shows a bar chart.

The bar chart gives information about the total number, in millions, of cars produced in **2017** and **2018** for each of five countries.

The total number of cars produced in **2017** and **2018** in Mexico was **8** million.

(a) Draw a bar on the bar chart in the Diagram Booklet to show this information.

(1 mark)

(b) Which of these six countries produced the greatest total number of cars?

(1 mark)

---

(continued on the next page)

Turn over

2. continued.

(c) Which country produced half as many cars as India?

(1 mark)

---

(d) Work out the difference between the total number of cars produced in Japan and the total number of cars produced in Spain.

(1 mark)

\_\_\_\_\_ million

(Total for Question 2 is 4 marks)

---

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

It shows a scale.

(a) Write down the number marked with the arrow on the scale.

(1 mark)

---

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

It shows a scale.

Mark the number **0.04** on the scale in the Diagram Booklet.

(1 mark)

(continued on the next page)

**3. continued.**

**(c) Write the number 5.68 correct to one decimal place.**

**(1 mark)**

---

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

---

4. Look at the diagram for Question 4(a) in the Diagram Booklet.

It shows two sides of a parallelogram.

- (a) On the grid in the Diagram Booklet, complete the parallelogram.

(1 mark)

(continued on the next page)

4. continued.

Look at the model for Question 4(b)

The model shows a **3-D** shape.

(b) (i) What is the mathematical name of this **3-D** shape?

(1 mark)

---

(ii) How many faces has this shape?

(1 mark)

---

(Total for Question 4 is 3 marks)

---

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

Brigid recorded the distance she ran on each of three days.

The table shows her results.

Brigid set herself the target of running a TOTAL of at least 30 km on these three days.

Show that Brigid did not achieve her target.

(3 marks)

Answer space continues on the next page.

5. continued.

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

---

6. (a) Find the value of

(i)  $\sqrt{31 \cdot 36}$   
(1 mark)

---

(ii)  $14^3$   
(1 mark)

---

(continued on the next page)

6. continued.

(b) Write a number on each line to make the calculation correct.

(i)  $10 - \underline{\hspace{2cm}} \times 2 = 4$

(1 mark)

(ii)  $(5 + \underline{\hspace{2cm}}) \times 3 = 36$

(1 mark)

(Total for Question 6 is 4 marks)

---

7. Below are the first five terms of a number sequence.

1            7            13            19            25

(a) (i) Write down the next term of the sequence.  
(1 mark)

---

(ii) Explain how you worked out your answer.  
(1 mark)

---

---

(continued on the next page)

7. continued.

(b) Explain why **188** cannot be a number in the sequence.

(1 mark)

---

---

---

(Total for Question 7 is 3 marks)

---

8. Jordan buys **256** notebooks.

He buys the notebooks in packs of **8** notebooks.

Each pack of **8** notebooks costs **£2.48**

Work out how much the **256** notebooks cost

Jordan.

(3 marks)

Answer space continues on the next page.

8. continued.

£ \_\_\_\_\_

(Total for Question 8 is 3 marks)

---

9. (a) Simplify

$$a \times a \times a \times a \times a$$

(1 mark)

---

(b) Simplify

$$8b \times 3c$$

(1 mark)

---

(c) Expand

$$3(y + 4)$$

(1 mark)

---

(continued on the next page)

Turn over

9. continued.

$$Q = 5v^2 - w$$

- (d) Work out the value of  $Q$  when  $v = \frac{1}{2}$  and  
 $w = \frac{1}{4}$   
(2 marks)

$$Q = \underline{\hspace{10em}}$$

(Total for Question 9 is 5 marks)

---

10. It takes a machine 8 seconds to produce a bolt.

Each day, the machine starts producing bolts at  
**09 30**

The machine produces bolts continuously every  
**8 seconds** until it stops at **16 10** on the same day.

Work out how many bolts the machine produces  
each day.

(4 marks)

Answer space continues on the next page.

10. continued.

---

**(Total for Question 10 is 4 marks)**

---

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

Triangle **ABC** is an equilateral triangle of side 9 cm

Using a ruler and compasses only, construct triangle **ABC**

You must show all your construction lines.

Side **AB** has been drawn for you in the Diagram Booklet.

(Total for Question 11 is 2 marks)

---

**12. Look at the table for Question 12(a) in the Diagram Booklet.**

**Mario is going to play two games on Saturday.**

**He will play one game on Saturday morning and one game on Saturday afternoon.**

**The table shows the games from which he is going to choose.**

**(a) Write down all the possible combinations of games that Mario can play on Saturday.**

**(2 marks)**

---

---

---

---

---

**(continued on the next page)**

**12. continued.**

**Look at the table for Question 12(b) in the Diagram Booklet.**

**Mario asked 100 students in his school to name their favourite card game.**

**His results are shown in the two-way table in the Diagram Booklet.**

**One of the students Mario asked is picked at random.**

**(b) Write down the probability that this student is in Year 11  
(1 mark)**

---

**(continued on the next page)**

**Turn over**

12. continued.

One of the Year 10 students is picked at random.

(c) Work out the probability that this student did NOT answer Whist.

(2 marks)

---

(Total for Question 12 is 5 marks)

---

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

It is NOT accurately drawn.

The diagram shows a trapezium.

Work out the area of the trapezium.

\_\_\_\_\_  $\text{m}^2$

(Total for Question 13 is 2 marks)

---

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

**It shows a grid with a pair of axes.**

**On the grid, draw the graph of  $y = 2x - 1$  for values of  $x$  from  $-1$  to  $4$**

**(Total for Question 14 is 3 marks)**

---

15. Kim spends  $\$N$

Of this, she spends

40% on food

$\frac{1}{4}$  on clothes

and the rest on petrol

Kim spends  $\$P$  on petrol.

Work out the ratio  $P : N$  in the form  $a : b$  where  $a$  and  $b$  are integers.

Give your answer in its simplest form.

(4 marks)

Answer space continues on the next page.

15. continued.

---

(Total for Question 15 is 4 marks)

---

Turn over

**16. Look at the table for Question 16 in the Diagram Booklet.**

**The table shows information about the number of mobile phones owned by each of 40 families.**

**For the information in the table,**

**(a) write down the mode,  
(1 mark)**

---

**(continued on the next page)**

16. continued.

For the information in the table,

(b) work out the mean.

(3 marks)

---

(Total for Question 16 is 4 marks)

---

17. Look at the diagram for Question 17 in the Diagram Booklet.

It shows a number machine.

Molly uses this number machine to work out the amount of tax that she has to pay on the money she earns.

When Molly works  $n$  hours the amount of tax she has to pay is  $\pounds T$

Find a formula for  $T$  in terms of  $n$

(3 marks)

Answer space continues on the next page.

17. continued.

---

(Total for Question 17 is 3 marks)

---

Turn over

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

- (a) Describe fully the single transformation that maps triangle **A** onto triangle **B****  
**(3 marks)**

---

---

---

- (b) Describe fully the single transformation that maps triangle **A** onto triangle **C****  
**(1 mark)**

---

---

---

**(Total for Question 18 is 4 marks)**

---

19. Write **1200** as a product of powers of its prime factors.

Show your working clearly.

(3 marks)

Answer space continues on the next page.

19. continued.

---

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

---

20. Alberto, Bill, Candela and Diana are four friends.

Here is some information about the height of each of these friends.

Alberto's height is 158 cm

Bill's height is 175 cm

Candela's height is greater than Diana's height.

The median height of these four friends is 160 cm

The range of the heights of these four friends is 21 cm

Work out Candela's height and Diana's height.

(3 marks)

Answer space continues on the next page.

20. continued.

Candela \_\_\_\_\_ cm

Diana \_\_\_\_\_ cm

(Total for Question 20 is 3 marks)

---

Turn over

21.  $\mathcal{E} = \{9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20\}$   
 $A = \{\text{multiples of } 3\}$   
 $B = \{\text{odd numbers}\}$

(a) List the members of the set

- (i)  $A \cap B$   
(1 mark)

---

- (ii)  $A \cup B$   
(1 mark)

---

(continued on the next page)

21. continued.

(b) Is it true that  $24 \in A$ ?

Mark one of the boxes below.

Yes

No

Give a reason for your answer.

(1 mark)

---

---

---

(continued on the next page)

21. continued.

Set **C** has 4 members such that

$$\mathbf{C \cap B' = \{10, 18\}}$$

- (c) List the members of one possible set **C**  
(2 marks)

(Total for Question 21 is 5 marks)

---

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

**It is NOT accurately drawn.**

**The diagram shows a shape made from a square **ABCD** and 4 identical semicircles.**

**As shown in the diagram, the semicircles have **AB**, **BC**, **CD** and **DA** as diameters.**

**The area of the square is  $36 \text{ cm}^2$**

**Calculate the total area of the shape.**

**Give your answer correct to one decimal place.**

**(4 marks)**

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

22. continued.

\_\_\_\_\_  $\text{cm}^2$

(Total for Question 22 is 4 marks)

---

Turn over

23. (a) Solve

$$p = \frac{3p - 5}{10}$$

Show clear algebraic working.

(3 marks)

$$p = \underline{\hspace{10em}}$$

(continued on the next page)

Turn over

23. continued.

(b) Simplify  $a^0$  where  $a > 0$   
(1 mark)

---

(c) Simplify fully

$$\frac{3ef^3}{6e^2f}$$

(2 marks)

---

(continued on the next page)

Turn over

23. continued.

(d) Factorise fully

$$10c^3d^2 + 15cd^4$$

(2 marks)

---

(Total for Question 23 is 8 marks)

---

24.  $\frac{2^k}{4^n} = 2^x$

Find an expression for **x** in terms of **k** and **n**

**x** = \_\_\_\_\_

(Total for Question 24 is 2 marks)

---

Turn over

**25. A cinema increased the cost of an adult ticket by 12%**

**After the increase, the cost of an adult ticket was £18.20**

**Work out the cost of an adult ticket before the increase.**

**(3 marks)**

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

25. continued.

£ \_\_\_\_\_

(Total for Question 25 is 3 marks)

---

**26. Look at the table for Question 26 in the Diagram Booklet.**

**The table gives information about the population, correct to 2 significant figures, of each of five cities in 2018**

**(a) Write  $8.8 \times 10^6$  as an ordinary number.**  
**(1 mark)**

---

**(b) Which of these cities had the least population in 2018?**  
**(1 mark)**

---

**(continued on the next page)**

**Turn over**

26. continued.

(c) Work out the difference between the population of Tokyo and the population of Ahmedabad in 2018

Give your answer in standard form correct to 2 significant figures.

(2 marks)

---

(Total for Question 26 is 4 marks)

---

Turn over

27. Look at the diagram for Question 27 in the Diagram Booklet.

It is NOT accurately drawn.

The diagram shows triangle **ABP** inside the regular hexagon **ABCDEF**

$$AB = 5 \text{ cm}$$

$$BP = 2 \text{ cm}$$

$$\text{Angle } ABP = 90^\circ$$

Work out the size of angle **PAF**

Give your answer correct to 3 significant figures.

(5 marks)

Answer space continues on the next page.

27. continued.

○

---

**(Total for Question 27 is 5 marks)**

---

**TOTAL FOR PAPER IS 100 MARKS**

**END OF PAPER**

---