

Mathematics
PAPER 2 (Calculator)
Foundation Tier

Total Marks

Monday 3 June 2024 – 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, pair of compasses, writing and drawing equipment, calculator, Formulae Booklet (enclosed). Tracing paper may be used.

YOU WILL BE GIVEN

A separate Diagram Booklet

INSTRUCTIONS

Answer ALL questions.

Answer the questions in the spaces provided in this Question Paper or in the separate Diagram Booklet – 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

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.

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.

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1. Write the following five numbers in order.

Start with the lowest number.

4 -3 7 2 -1

(Total for Question 1 is 1 mark)

2. Change **5000** millilitres to litres.

_____ litres

(Total for Question 2 is 1 mark)

3. Write $\frac{31}{100}$ as a decimal.

(Total for Question 3 is 1 mark)

4. Write down the multiple of **7** that is between **30** and **40**

(Total for Question 4 is 1 mark)

5. Complete the statement below to make it correct.

$$\underline{\hspace{2cm}} \times m = 2m$$

(Total for Question 5 is 1 mark)

- 6. Look at the diagram for Question 6 in the separate Diagram Booklet.**

The diagram is a pictogram.

Ben sells houses.

The pictogram shows information about the number of houses Ben sold in each of the first three months of last year.

- (a) Write down the number of houses Ben sold in January.**

(1 mark)

- (b) In April, Ben sold 11 houses.**

Show this information on the pictogram.

(1 mark)

(continued on the next page)

6. continued.

- (c) Ben sold a total of 60 houses in the first five months of last year.**

**Work out the number of houses Ben sold in May.
(3 marks)**

(Total for Question 6 is 5 marks)

7. (a) Look at the diagram for Question 7(a) in the separate Diagram Booklet.

The diagram shows a line.

Measure the length of the line.

Give your answer in centimetres.

(1 mark)

_____ centimetres

- (b) Look at the diagram for Question 7(b) in the separate Diagram Booklet.

The diagram shows an angle marked X.

Measure the size of the angle marked X.

(1 mark)

_____ °

(continued on the next page)

7. continued.

(c) In the space provided for Question 7 (c) in the separate Diagram Booklet, draw a hexagon.

(1 mark)

(Total for Question 7 is 3 marks)

8. Look at the diagram for Question 8 in the separate Diagram Booklet.

The diagram is a coordinate grid.

The points **A** and **B** are shown on the grid.

- (a) Write down the coordinates of the point **A**.

(1 mark)

(_____ , _____)

- (b) Find the coordinates of the midpoint of **AB**.

(2 marks)

(_____ , _____)

- (c) On the grid, mark with a cross (X) the point with coordinates $(-4, 2)$

Label this point **C**.

(1 mark)

(Total for Question 8 is 4 marks)

9. Anil has a job as a driver.
He is paid for each mile he drives.
He is also paid expenses.

One week Anil writes down the distance readings from his car.

Start of week:	4	7	2	4	1	miles
End of week:	4	7	8	7	9	miles

For this week, Anil is paid 47p for each mile he drives.
He is also paid expenses of £80

Work out the total amount that Anil is paid.
Give your answer in pounds.
(4 marks)

Answer space continues on the next page.

9. continued.

£ _____

(Total for Question 9 is 4 marks)

Turn over

10. Anita throws a coin 3 times.

Each time the coin can land on heads (H) or tails (T).

List all the possible outcomes.

(Total for Question 10 is 2 marks)

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

Majid has a spinner.

The diagram shows the spinner with three sections labelled 1, 2 and 3.

Majid is going to spin the arrow.

The arrow can land on 1 or on 2 or on 3

Majid says,

“The probability that the arrow will land on 2 is $\frac{1}{3}$ because the spinner has three sections.”

Is Majid correct?

You must give a reason for your answer.

(1 mark)

Answer space continues on the next page.

11. continued.

(Total for Question 11 is 1 mark)

12. Saira buys 24 bars of chocolate.

$\frac{2}{3}$ of the 24 bars are white chocolate.

The rest of the 24 bars are milk chocolate.

Each milk chocolate bar has a weight of 35 grams.

Work out the total weight of the milk chocolate bars that Saira buys.

_____ grams

(Total for Question 12 is 3 marks)

Turn over

13. (a) Simplify $2p \times 3q$
(1 mark)

- (b) Work out the value of T , when:

$$T = w + 2y$$

$$w = 3$$

$$\text{and } y = -4$$

(2 marks)

$$T = \underline{\hspace{2cm}}$$

(Total for Question 13 is 3 marks)

14. (a) On Monday, Lizzie cycled 36 kilometres in 3 hours.

Work out Lizzie's average speed.

(2 marks)

_____ kilometres per hour

(continued on the next page)

14. continued.

- (b) On Tuesday, Lizzie cycled 36 kilometres at an average speed of 16 kilometres per hour.**

Lizzie says that the total time she cycled on Monday and Tuesday was less than 5 hours 20 minutes.

Is Lizzie correct?

You must show how you get your answer.

(3 marks)

(Total for Question 14 is 5 marks)

Turn over

15. £3500 is invested in a bank for 6 years.

The bank pays SIMPLE interest at a rate of 2·5% per year.

Work out the total amount of simple interest paid.

£ _____

(Total for Question 15 is 2 marks)

Turn over

16. Look at the diagram for Question 16 in the separate Diagram Booklet.

The diagram shows a graph.

You can use the graph to change between ounces and grams.

(a) Change 8 ounces to grams.

(1 mark)

_____ grams

(b) Change 1 kg to ounces.

(2 marks)

_____ ounces

(Total for Question 16 is 3 marks)

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

The diagram shows triangle ABC .

The region R consists of all points inside the triangle that are

less than 5 cm from A

AND closer to C than to B .

On the diagram show, by shading, the region R .

(Total for Question 17 is 3 marks)

18. Mrs Simpson organised a school trip for 66 children.

The total cost of the trip was £1800

The school paid 56% of the total cost.

The rest of the total cost was divided equally between the 66 children.

Work out how much money each child paid.

£ _____

(Total for Question 18 is 3 marks)

Turn over

19. (a) Work out the value of $\frac{\sqrt{35 \cdot 2 + 1 \cdot 7^3}}{4 \cdot 6^2 - 8 \cdot 91}$

Write down all the numbers on your calculator display.

(2 marks)

(b) Write your answer to part (a) correct to 2 significant figures.

(1 mark)

(Total for Question 19 is 3 marks)

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

The diagram is NOT accurately drawn.

The diagram shows a right-angled triangle labelled **ABC**.

In the diagram:

$AB = 10 \text{ cm}$

$AC = 19 \text{ cm}$

Work out the length of **CB**.

Give your answer correct to **3** significant figures.

_____ **cm**

(Total for Question 20 is 2 marks)

21. (a) Write 90 as a product of its prime factors.
(2 marks)

(continued on the next page)

21. continued.

(b) When

$$T = 2^2 \times 3$$

$$U = 2 \times 3^2$$

write down the lowest common multiple (LCM) of
T and U.

(1 mark)

(Total for Question 21 is 3 marks)

22. The number of hours, H , that some machines take to make 5000 bottles is given by

$$H = \frac{72}{n} \quad \text{where } n \text{ is the number of machines.}$$

On Monday, 6 machines made 5000 bottles.

On Tuesday, 9 machines made 5000 bottles.

The machines took more time to make the bottles on Monday than on Tuesday.

How much more time?

(2 marks)

Answer space continues on the next page.

22. continued.

_____ hours

(Total for Question 22 is 2 marks)

23. There are only red discs, blue discs and yellow discs in a bag.

There are 24 yellow discs in the bag.

Mel is going to take at random a disc from the bag.

The probability that the disc will be yellow is 0.16

the number of red discs : the number of
blue discs = 5 : 4

Work out the number of red discs in the bag.
(4 marks)

Answer space continues on the next page.

23. continued.

(Total for Question 23 is 4 marks)

24. (a) Complete the table below of values for $y = x^2 - x$
(2 marks)

x	-2	-1	0	1	2	3
y	6		0		2	

- (b) Look at the diagram for Question 24 (b) in the separate Diagram Booklet.

The diagram shows a grid.

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

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

(Total for Question 24 is 6 marks)

25. Andy, Luke and Tina share some sweets in the ratio $1 : 6 : 14$

Tina gives $\frac{3}{7}$ of her sweets to Andy.

Tina then gives $12\frac{1}{2}\%$ of the rest of her sweets to Luke.

Tina says,

“Now all three of us have the same number of sweets.”

Is Tina correct?

You must show how you get your answer.

(4 marks)

Answer space continues on the next page.

25. continued.

(Total for Question 25 is 4 marks)

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

The diagram is NOT accurately drawn.

The diagram shows a quadrilateral labelled **ABCD**.

In the diagram:

All angles are measured in degrees.

$$\text{Angle } ABC = 4y + 8$$

$$\text{Angle } BCD = 3y - 3$$

$$\text{Angle } CDA = 2y + 15$$

$$\text{Angle } DAB = 4y + 15$$

Show that **ABCD** is a trapezium.

(4 marks)

Answer space continues on the next page.

26. continued.

(Total for Question 26 is 4 marks)

27. Look at the diagrams for Question 27 in the separate Diagram Booklet.

The diagrams are NOT accurately drawn.

The diagrams show two similar isosceles triangles labelled **ABC** and **DEF**.

In triangle **ABC**:

$$AB = 8 \text{ cm}$$

$$AC = 8 \text{ cm}$$

$$CB = 6 \text{ cm}$$

In triangle **DEF**:

$$DE = DF$$

$$FE = 1.5 \text{ cm}$$

Work out the length of **DE**.

(2 marks)

Answer space continues on the next page.

27. continued.

_____ cm

(Total for Question 27 is 2 marks)

28. Look at the table for Question 28 in the separate Diagram Booklet.

The table shows information about the weights of 120 oranges.

- (a) Find the class interval that contains the median.**
(1 mark)

(continued on the next page)

28. continued.

**(b) Calculate an estimate for the mean weight of the
120 oranges.**

Give your answer correct to 3 significant figures.

(3 marks)

_____ grams

(Total for Question 28 is 4 marks)

TOTAL FOR PAPER IS 80 MARKS

END OF PAPER
