

Mathematics A
PAPER 2F
Foundation Tier
(Calculator)

Total Marks

Monday 3 June 2024 – Morning

Time: 2 hours

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. Tracing paper may be used.

YOU WILL BE GIVEN

A separate Diagram Booklet

A separate Formulae Booklet

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 in the separate Diagram Booklet – there may be more space than you need.

Calculators may be used.

You must NOT write anything in the Formulae Booklet.

Anything you write on the formulae pages will gain NO credit.

You may be given a cut out shape for Question 14 (a) and 14 (b).

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.

ADVICE

Read each question carefully before you start to answer it.

Check your answers if you have time at the end.

Answer ALL TWENTY EIGHT questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1. The table below shows the distance, in kilometres, each of 6 people travelled to get to a train station.

Name	Distance (km)
Ted	7
Yui	12
Barney	10
Ichika	5
Wilfred	4
Bella	9

On the grid provided for Question 1 in the separate Diagram Booklet, draw a bar chart to show this information.

(Total for Question 1 is 3 marks)

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

The diagram shows shape J on a grid.

- (a) On the grid provided for Question 2 (a) in the separate Diagram Booklet, draw a shape that is congruent to shape J

(1 mark)

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

The diagram shows shape H on a grid. Shape H is an enlargement of shape J.

What is the scale factor of the enlargement?

(2 marks)

(continued on the next page)

2. continued.

(c) Look at the diagram for Question 2 (c) in the separate Diagram Booklet.

The diagram shows shape K

Shape K has exactly one line of symmetry.

Draw this line of symmetry on shape K

(1 mark)

(continued on the next page)

2. continued.

(d) Look at the diagram for Question 2 (d) in the separate Diagram Booklet.

The diagram shows shape L drawn on a square grid.

Each square on the grid represents a 1 cm square.

Work out the perimeter of shape L

Remember: Each square on the grid represents a 1 cm square.

(1 mark)

_____ **cm**

(continued on the next page)

2. continued.

(e) Work out the area of shape L

Remember: Each square on the grid represents a
1 cm square.

(1 mark)

_____ cm²

(Total for Question 2 is 6 marks)

3. (a) Write the five numbers shown below in numerical order.

Start with the smallest number.

(1 mark)

-77 39 -89 43 -6

-
- (b) Write the five decimals shown below in order of size.

Start with the smallest decimal.

(1 mark)

0.134 0.12 0.145 0.017 0.3

3. continued.

(c) Write 0.7 as a percentage.

(1 mark)

_____ %

(d) Write $\frac{27}{100}$ as a decimal.

(1 mark)

(continued on the next page)

3. continued.

(e) There are 60 plants on a plant stall.

$\frac{7}{10}$ of the plants are vegetable plants.

Work out how many of the plants are NOT vegetable plants.

(2 marks)

(Total for Question 3 is 6 marks)

4. Look at the five numbers below. They are the first five terms of a number sequence.

106 99 92 85 78

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

- (ii) Explain how you found your answer to
part (a)(i)
(1 mark)

(continued on the next page)

4. continued.

(b) The 9th term of the sequence is 50

Work out the 12th term of the sequence.

(1 mark)

(continued on the next page)

4. continued.

(c) Umberto says 7 is a term in the sequence.

Umberto is wrong.

Explain why.

(1 mark)

(Total for Question 4 is 4 marks)

Turn over

5. Look at the diagram for Question 5 in the Diagram Booklet. The diagram shows two fair spinners. They are Percy's spinners.

Spinner **A** is 4-sided and can land on 1, 1, 2 or 3

Spinner **B** is 5-sided and can land on 5, 7, 8, 9 or 11

(continued on the next page)

5. continued.

(a) Look at the incomplete table for Question 5 (a) in the separate Diagram Booklet.

Percy spins each spinner once.

He subtracts the number that spinner **A lands on from the number that spinner **B** lands on to get his score.**

Complete the table to show all the possible scores.

(2 marks)

(continued on the next page)

5. continued.

(b) Find the probability that

**(i) Percy's score is an even number
(1 mark)**

**(ii) Percy's score is greater than 7
(1 mark)**

(Total for Question 5 is 4 marks)

6. There are 150 animals on a farm.

Of these animals

19 are sheep

32 are goats

3 are dogs

The rest of the animals are chickens.

Write the number of chickens as a fraction of the total number of animals.

Give your fraction in its simplest form.

(Total for Question 6 is 3 marks)

7. 2 jugs each contain 350 millilitres of milk.
5 bottles each contain y millilitres of milk.

Peter tips all the milk from the 2 jugs and the 5 bottles into a container.

The total amount of milk that Peter tips into the container is 2.8 litres.

Work out the value of y

$y =$ _____

(Total for Question 7 is 4 marks)

8. Bargain Crafts and Art's Store each have a special offer on tins of crayons.

Bargain Crafts: Crayons \$4.20 per tin

SPECIAL OFFER: Pay for 2 tins get 1 tin free

Art's Store: Pack of 5 tins of crayons for \$18

SPECIAL OFFER: 25% off each pack of 5 tins

Heidi buys 30 tins of crayons from Bargain Crafts using the special offer.

Amir buys 30 tins of crayons from Art's Store using the special offer.

Work out the difference between the amount that Heidi pays and the amount that Amir pays.

(4 marks)

Answer space continues on the next page.

8. continued.

\$ _____

(Total for Question 8 is 4 marks)

9. A circle has a radius of 9 cm.

Calculate the area of the circle.

Give your answer correct to 3 significant figures.

_____ cm²

(Total for Question 9 is 2 marks)

10. Look at Diagram 1 for Question 10 in the separate Diagram Booklet. The diagram shows shape **A** drawn on a square grid. Each square on the grid represents a 1 cm square.

Look at Diagram 2 for Question 10 in the separate Diagram Booklet. The diagram shows three shapes: shape **P**, shape **Q** and shape **R**.

Which shape has the same area as shape **A**?

Remember: each square on the grid represents a 1 cm square.

(Total for Question 10 is 2 marks)

11. (a) Simplify the expression below.

$$y \times y \times y \times y \times y$$

(1 mark)

(b) Simplify the expression below.

$$m + m + m$$

(1 mark)

(continued on the next page)

11. continued.

(c) Simplify the expression below.

$$3p^2 + 7p^2 - 4p^2$$

(1 mark)

(d) Expand the bracket below.

$$k(k + 8)$$

(1 mark)

(continued on the next page)

11. continued.

(e) Factorise the expression below.

$$15x + 20$$

(1 mark)

(continued on the next page)

11. continued.

- (f) Sophia sells v packs of toy cars and q boxes of toy cars.

Each pack contains 3 toy cars.

Each box contains 5 toy cars.

The total number of toy cars that Sophia sells is T

Write down a formula for T in terms of v and q

(3 marks)

(Total for Question 11 is 8 marks)

Turn over

12. Shane buys a clock in Australia.

The clock costs 232 Australian dollars.

In India, an identical clock costs 12 420 Indian rupees.

The exchange rate is

1 Australian dollar = 54 Indian rupees

The clock costs more in Australia than in India.

Work out how much more.

You must give the units of your answer.

(Total for Question 12 is 3 marks)

Turn over

13 Tom wants to knit an item for a baby.

**He can knit a jumper (J) or a blanket (B) or a hat (H)
or some socks (S)**

**He can knit using white wool (W) or using
yellow wool (Y)**

**Tom chooses one item to knit and chooses one colour
of wool.**

**Write down all the possible combinations for the item
that Tom could knit.**

(Total for Question 13 is 2 marks)

14. Look at the diagram for Question 14 (a) in the separate Diagram Booklet. The diagram shows shape **A and shape **B** on a coordinate grid.**

- (a) Describe fully the single transformation that maps shape **A** onto shape **B**.
You may be given a cut out shape for this question.
(2 marks)**

- (b) Using the diagram for Question 14 (b) in the separate Diagram Booklet, reflect shape **A** in the line with equation $y = -1$.
You may be given a cut out shape for this question.
(2 marks)**

(Total for Question 14 is 4 marks)

15. Look at the diagram for Question 15 in the separate Diagram Booklet. The diagram is an incomplete Venn diagram.

For this question:

$$\mathcal{E} = \{11, 12, 13, 14, 15, 16, 17, 18, 19, 20\}$$

$$A = \{11, 14, 16, 19\}$$

$$B = \{12, 14, 15, 16, 18, 20\}$$

Complete the Venn diagram for this information.

(Total for Question 15 is 3 marks)

16. Use your calculator to work out the value of

$$\frac{17.9}{8.61 + 2.36} - 1.2^2$$

Give your answer as a decimal.

Write down all the figures on your calculator display.

(Total for Question 16 is 2 marks)

17. Look at the list of eight numbers and letters below.

They are written in order of size,

r 6 7 8 t 16 w w

where **r**, **t** and **w** are integers.

The median of the eight numbers is **10**

The mode of the eight numbers is **18**

The range of the eight numbers is **13**

Work out the value of **r**, the value of **t** and the
value of **w**
(3 marks)

Answer space continues on the next page.

17. continued.

$r =$ _____

$t =$ _____

$w =$ _____

(Total for Question 17 is 3 marks)

Turn over

18. (a) Look at the diagram for Question 18 (a) in the separate Diagram Booklet. The diagram shows a grid.

On the grid, draw the straight line with equation

(i) $y = 2$

(ii) $x = 6$

(iii) $y = x + 1$

Label each line with its equation.

(3 marks)

- (b) Label, with the letter **R**, the region that satisfies all three of the inequalities

$$y \geq 2 \quad x \leq 6 \quad y \leq x + 1$$

(1 mark)

(Total for Question 18 is 4 marks)

19. A plane takes 9 hours 36 minutes to fly from New Delhi to Perth.

The plane flies at an average speed of 820 km/h.

Work out the total distance the plane flies.

_____ km

(Total for Question 19 is 3 marks)

20. Show that $2\frac{4}{7} \times 3\frac{1}{9} = 8$

(Total for Question 20 is 3 marks)

21. Look at the diagram for Question 21 in the separate Diagram Booklet. The diagram is NOT accurately drawn.

The diagram shows triangle **ABC**

In triangle **ABC**:

$$AC = 6.5 \text{ cm}$$

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

$$\text{Angle } BAC = 34^\circ$$

Angle **ABC** is a right angle.

Work out the value of **x**

Give your answer correct to one decimal place.

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

(Total for Question 21 is 3 marks)

22. Change a speed of W metres per second to a speed in kilometres per hour.

Give your answer in terms of W in its simplest form.

_____ kilometres per hour

(Total for Question 22 is 3 marks)

23. Look at the diagram for Question 23 in the separate Diagram Booklet. The diagram is NOT accurately drawn. The diagram shows a 6-sided shape, **ABCDEF**.

In the diagram:

$$AF = 21 \text{ cm}$$

$$CD = 15 \text{ cm}$$

$$AB = FE = 13 \text{ cm}$$

The perpendicular height of the shape is $h \text{ cm}$

CD is parallel to **AF**

All the marked angles are right angles.

The area of the shape is 390 cm^2

Work out the value of h

(4 marks)

Answer space continues on the next page.

23. continued.

$h =$ _____

(Total for Question 23 is 4 marks)

24. Ishir plants 600 bulbs in a garden.

He plants tulip bulbs, crocus bulbs and daffodil bulbs so that:

number of tulip bulbs : number of crocus bulbs :

number of daffodil bulbs = 9 : 4 : 2

45% of the tulip bulbs are for yellow flowers.

$\frac{5}{8}$ of the crocus bulbs are for yellow flowers.

All of the daffodil bulbs are for yellow flowers.

Work out the number of bulbs that are for yellow flowers.

(5 marks)

Answer space continues on the next page.

24. continued.

(Total for Question 24 is 5 marks)

25. Giovanni invests 4500 koruna in a savings account for 4 years.

He gets 2.4% per year compound interest.

Work out how much money Giovanni will have in the savings account at the end of 4 years.

Give your answer correct to the nearest koruna.

_____ koruna

(Total for Question 25 is 3 marks)

Turn over

26. Solve the simultaneous equations shown below.

$$6x + 4y = 1$$

$$3x + 5y = 8$$

Show clear algebraic working.

$$x = \underline{\hspace{4cm}}$$

$$y = \underline{\hspace{4cm}}$$

(Total for Question 26 is 3 marks)

27. (i) Factorise the expression below.

$$x^2 + 9x - 22$$

(2 marks)

(ii) Hence, solve the following equation:

$$x^2 + 9x - 22 = 0$$

(1 mark)

(Total for Question 27 is 3 marks)

Turn over

28. Ali uses a fitness tracker to count the number of steps he walks each day for 7 days.

For the first 4 days, his mean number of steps is 11 800

For the next 3 days, his mean number of steps is 13 207

Work out his mean number of steps for the 7 days.

(Total for Question 28 is 3 marks)

TOTAL FOR PAPER IS 100 MARKS
END OF PAPER
