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	

X65916A

YOU MUST HAVE

Ruler, protractor, compasses, writing and drawing equipment, calculator. Tracing paper may be used.

YOU WILL BE GIVEN

Diagram Book
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 models for Question 2(c) and Question 24
They are NOT accurate.

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.

Good luck with your examination.

Answer ALL TWENTY FIVE questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1. **Look at the table for Question 1 in the Diagram Book.**

    It shows the length, in kilometres, of the coastline of each of five oceans.

    (a) **Which of these oceans has the greatest length of coastline?**

    (1 mark)

    _____

    (b) **Write the number 17 968 in words.**

    (1 mark)

    _____

Turn over

1. continued.

(c) Write the number **66 526** correct to the nearest thousand.

(1 mark)

_____

(d) Work out the total length of the coastlines of the Arctic Ocean and the Pacific Ocean.

(1 mark)

_____ kilometres

(Total for Question 1 is 4 marks)

Turn over

2. **(a)** **Write down the order of rotational symmetry of a square.**

(1 mark)

_____

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

Measure the size of the angle marked X

_____ **°**

(ii) **Write down the mathematical name of this type of angle.**

(2 marks)

_____

(continued on the next page)

2. **continued.**

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

You may be provided with a model.

They show a **3−D** shape.

(c) (i) Write down the mathematical name of the **3−D** shape.

_____

(ii) How many edges does the shape have?

(2 marks)

_____

(Total for Question 2 is 5 marks)

Turn over

3. **Look at the diagram for Question 3 in the Diagram Book.**

   It is a pictogram which gives some information about the number of parcels delivered by a delivery company on each of five days last week.

   On Monday, the delivery company delivered 20 parcels.

   Work out the total number of parcels delivered by the delivery company on these five days.

   (4 marks)

   Answer space continues on the next page.

3. **continued.**

_____

(Total for Question 3 is 4 marks)

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

It shows a grid.

The points **A**, **B** and **C**, shown on the grid, are the vertices of triangle **ABC**

(a) Write down the coordinates of the point **B**
(1 mark)

(_____ , _____)

(b) Write down the mathematical name of triangle **ABC**
(1 mark)

_____

(continued on the next page)

Turn over

4. continued.

The coordinates of point D are $(1, -4)$

(c) On the grid, mark the position of D

Label the point D

(1 mark)

(d) Find the coordinates of the midpoint of AB

(2 marks)

(_____ , _____)

(Total for Question 4 is 5 marks)

Turn over

5. **Look at the diagram for Question 5(a) in the Diagram Book.**

It shows a shape made of squares.

(a) **Shade $\frac{3}{5}$ of the shape in the Diagram Book.**

(1 mark)

(b) **Which one of these five fractions is NOT equivalent to $\frac{4}{7}$?**

$$\frac{40}{70} \qquad \frac{8}{14} \qquad \frac{400}{700} \qquad \frac{14}{17} \qquad \frac{20}{35}$$

(1 mark)

_____

(continued on the next page)

5.   continued.

(c) Write $\frac{3}{10}$ as a percentage.

(1 mark)

_____%

(d) Write $\frac{77}{9}$ as a mixed number.

(1 mark)

_____

(continued on the next page)

Turn over

5. **continued.**

Given that

$\dfrac{5}{6}$ **of a number is 40**

(e)   what is the number?

(2 marks)

_____

(Total for Question 5 is 6 marks)

6.   The cost of a mobile phone in the UK is **£350**

     The cost of an identical mobile phone in India is

     28 938 rupees.

     The exchange rate is **£1 = 91** rupees.

     The cost of the mobile phone in the UK is more than

     the cost of the mobile phone in India.

     Work out how much more.

     (3 marks)

     Answer space continues on the next page.

6. **continued.**

(Total for Question 6 is 3 marks)

7. **Look at the table for Question 7 in the Diagram Book.**

    It shows a menu at a restaurant.

    Hassan is going to eat at the restaurant.

    Hassan is going to choose one starter and one main course from the menu.

    List all the possible combinations that Hassan can choose.

    _____

    _____

    _____

    _____

    _____

(Total for Question 7 is 2 marks)

8. **(a)** **Simplify**

w ✖ w ✖ w ✖ w ✖ w

(1 mark)

_____

(b) **Simplify**

5p ✖ 3r

(1 mark)

_____

(continued on the next page)

8. continued.

(c) Simplify

$$3m + 2q - m + 5q$$

(2 marks)

_____

(continued on the next page)

8.   continued.

(d) Solve

$$5y - 7 = y + 12$$

Show clear algebraic working.

(3 marks)

Answer space continues on the next page.

8. **(d)** **continued.**

y = _____

(Total for Question 8 is 7 marks)

9. **Look at the table for Question 9 in the Diagram Book.**

    It shows information about the number of pieces of homework each student in Year 11 received last week.

    (a) **Work out the range of the number of pieces of homework.**

    (2 marks)

    _____

(continued on the next page)

9. continued.

(b) Write down the mode of the number of pieces of homework.

(1 mark)

_____

(continued on the next page)

9.   **continued.**

    (c)   **Work out the mean number of pieces of homework.**

        Give your answer correct to one decimal place.

        (3 marks)

_____

(Total for Question 9 is 6 marks)

10. **Look at the diagram for Question 10 in the Diagram Book.**

ABC is a triangle.

AB = 11 cm and **BC = 9·5 cm**

Angle **ABC = 65°**

Draw accurately the triangle ABC

The line AB has been drawn for you in the Diagram Book.

(Total for Question 10 is 2 marks)

11. **A circle has radius $7 \cdot 5$ cm**

Work out the area of the circle.

Give your answer correct to 3 significant figures.

_____ cm^2

(Total for Question 11 is 2 marks)

Turn over

12. Look at the two formulae for Question 12 in the Diagram Book.

The formula for Question 12(a) can be used to work out the cost, in riyals, of hiring a bicycle in Qatar for a number of days.

Ghalia hired a bicycle in Qatar for **14** days.

(a) Work out the cost.
    (2 marks)

_____ riyals

(continued on the next page)

Turn over

12. continued.

The formula for Question 12(b) can be used to work out the cost, in riyals, of hiring a helmet in Qatar for a number of days.

Kasun wants to hire a bicycle and a helmet for the same number of days.
He wants to hire them for as many days as he can.
He has 750 riyals to spend.

(b) Work out how much of the 750 riyals is not spent.

(4 marks)

Answer space continues on the next page.

Turn over

12. (b) continued.

_____ **riyals**

(Total for Question 12 is 6 marks)

Turn over

13. There are some counters in a bag.

7 of the counters are blue.

5 of the counters are green.

The rest of the counters are yellow.

One counter is going to be taken at random from the bag.

The probability that the counter is blue or is green is $\frac{6}{13}$

Work out how many yellow counters there are in the bag.

(3 marks)

Answer space continues on the next page.

13. continued.

(Total for Question 13 is 3 marks)

Turn over

14. (a) **Work out**

39% of 450

(2 marks)

_____

(b) **Write one pair of brackets in the calculation below so that the answer is correct.**

$9 \times 8 - 5 - 2 = 25$

(1 mark)

(continued on the next page)

Turn over

14. continued.

    (c) **Work out the value of**

$$\frac{\sqrt{8 \cdot 9}}{6 \cdot 2 - 3 \cdot 5}$$

        Give your answer as a decimal.

        Write down all the figures on your calculator display.

        (2 marks)

(Total for Question 14 is 5 marks)

15. Write **600** as a product of powers of its prime factors.

Show your working clearly.

(3 marks)

Answer space continues on the next page.

15. continued.

_____

(Total for Question 15 is 3 marks)

16. **Show that**

$$2\frac{4}{7} \div 1\frac{1}{8} = 2\frac{2}{7}$$

(3 marks)

Answer space continues on the next page.

16. continued.

(Total for Question 16 is 3 marks)

17. The bearing of Paris from London is **149°**

Work out the bearing of London from Paris.

_____ °

(Total for Question 17 is 2 marks)

18. $\mathscr{E}$ = {letters of the alphabet}

B = {b, r, a, z, i, l}

I = {i, r, e, l, a, n, d}

(a) List the members of the set

(i) B ∪ I

_____

(ii) B ∩ I′

_____

(2 marks)

(continued on the next page)

18. continued.

Remember:

$\mathscr{E}$ **= {letters of the alphabet}**

B = {b, r, a, z, i, l}

I = {i, r, e, l, a, n, d}

K = {k, e, n, y, a}

Cody writes down the statement $B \cap K = \emptyset$

Cody's statement is wrong.

(b) Explain why.

(1 mark)

_____

_____

_____

(Total for Question 18 is 3 marks)

_____

Turn over

19. **Look at the diagram for Question 19 in the Diagram Book.**

   It is NOT accurately drawn.

   ABCD and FGHI are parallel straight lines.
   EBGJ and ECH are straight lines.

   BE = CE

   Angle BEC = 44°

   Work out the size of angle JGH

   Give a reason for each stage of your working.

   (5 marks)

   Answer space continues on the next page.

19. continued.

               °

(Total for Question 19 is 5 marks)

20. Mariana sells bags of bird food.

The bags that Mariana sold last week each contained **12 kg** of seeds.

The bags that she is going to sell next week will each contain a mixture of nuts and seeds where for each bag

weight of nuts : weight of seeds $= 4 : 5$

The total weight of the nuts and the seeds in each bag will be **19·35 kg**

The weight of seeds in each bag that Mariana sells next week will be less than the weight of seeds in each bag that Mariana sold last week.

(continued on the next page)

20. continued.

Work out this decrease as a percentage of the weight of seeds in each bag that Mariana sold last week.

Give your answer correct to one decimal place.

(4 marks)

Answer space continues on the next page.

20. **continued.**

_____%

(Total for Question 20 is 4 marks)

Turn over

21. **Look at the diagram for Question 21 in the**

    Diagram Book.

    It is NOT accurately drawn.

    It shows a right–angled triangle ABC

    AB = x cm

    AC = 6·5 cm

    Angle ABC = 42°

    Angle ACB is a right–angle.

    Work out the value of x

    Give your answer correct to one decimal place.

    (3 marks)

    Answer space continues on the next page.

21. continued.

x = _____

(Total for Question 21 is 3 marks)

22. Solve the simultaneous equations

$$5r + 2t = 10$$
$$2r - 4t = 7$$

Show clear algebraic working.

(3 marks)

Answer space continues on the next page.

22. continued.

r = _____

t = _____

(Total for Question 22 is 3 marks)

23. **(i)** **Factorise**

$$y^2 + 2y - 24$$

(2 marks)

_____

(ii) **Hence solve**

$$y^2 + 2y - 24 = 0$$

(1 mark)

_____

(Total for Question 23 is 3 marks)

Turn over

24. **Look at Diagram 1 and Diagram 2 for Question 24 in the Diagram Book.**

   You may be provided with a model.

   They are NOT accurate.

   Diagram 1 and the model show a triangular prism, ABCDEF

   Diagram 2 shows the cross section of the prism, AED

   BC = AD = 11·2 cm

   DC = EF = AB = 15 cm

   ED = FC = 7·4 cm

   Angles AED and BFC are right angles.

   Work out the volume of the prism.

   Give your answer correct to 3 significant figures.

   (5 marks)

   Answer space continues on the next two pages.

24. **continued.**

24. continued.

_____ cm^3

(Total for Question 24 is 5 marks)

25. Chengbo sold a house for **180 000** yuan.

The amount for which he sold the house is

24% more than the amount he paid for the house.

(a) Work out how much Chengbo paid for

the house.

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

(3 marks)

_____ yuan

(continued on the next page)

Turn over

25. continued.

Zhi bought a house on **1**st January **2017**

When she bought the house, its value was

120 000 yuan.

The value of the house increased by

1·8% per year.

(b) Work out the value of Zhi's house on

1st January **2020**

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

(3 marks)

Answer space continues on the next page.

25. (b) continued.

_____ **yuan**

(Total for Question 25 is 6 marks)

TOTAL FOR PAPER IS 100 MARKS

END OF PAPER