Total Marks

Mathematics A

Paper 2F

(Calculator)

Foundation Tier

Thursday 4 June 2020 − Morning

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	

Pearson

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.

There may be spare copies of some diagrams.

You may be provided with a model for Question 24

ADVICE

Read each question carefully before you start to answer it.

Check your answers if you have time at the end.

Answer ALL TWENTY FOUR questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1. Here is a list of eight numbers.

    1   17   21   25   26   31   39   64

    From this list, write down

    (a) an even number
         (1 mark)

         _____

    (b) a multiple of **3**
         (1 mark)

         _____

    (c) a prime number
         (1 mark)

         _____

(continued on the next page)

1. continued.

Remember:

Here is a list of eight numbers.

1   17   21   25   26   31   39   64

(d) From this list, write down a cube number

(1 mark)

_____

(Total for Question 1 is 4 marks)

2.　(a)　Change **3** litres into millilitres.

(1 mark)

_____ millilitres

(b)　Change **6500** grams into kilograms.

(1 mark)

_____ kilograms

(Total for Question 2 is 2 marks)

3. Look at the table for Question 3 in the Diagram Book.

It shows an incomplete frequency table.

Paula asks **16** members of her class the number of pets they each have.

Here are her results.

| 1 | 2 | 2 | 4 | 0 | 1 | 2 | 1 |

| 3 | 3 | 4 | 1 | 1 | 0 | 3 | 2 |

(a) Complete the frequency table for her results in the Diagram Book.

There are ten spaces to fill.

(2 marks)

(continued on the next page)

3. continued.

(b) Write down the mode for the number of pets.

(1 mark)

_____

(c) Work out the range for the number of pets.

(1 mark)

_____

(Total for Question 3 is 4 marks)

4.   Look at the table for Question 4 in the

Diagram Book.

It gives the minimum temperature for January **2018**

in each of five cities.

(a)   Which of these five cities has the lowest

minimum temperature?

(1 mark)

_____

(continued on the next page)

4.   continued.

(b) Work out the difference between the minimum
     temperature of Donetsk and the minimum
     temperature of Sydney.

     (1 mark)

     _____°C

(continued on the next page)

4.   continued.

The minimum temperature in Edmonton for January **2018** was **50°C** less than the minimum temperature in Mombasa for January **2018**

(c)   Work out the minimum temperature in Edmonton for January **2018**

(1 mark)

_____°C

(Total for Question 4 is 3 marks)

Turn over

5.   (a) **Write these five decimals in order of size.**

        Start with the smallest decimal.

        (1 mark)

        0·9   0·035   0·003   0·539   0·5

_____

_____

    (b) **Write**

        0·6 as a percentage.

        (1 mark)

_____%

(continued on the next page)

5.   continued.

(c) Write

$\dfrac{60}{7}$ as a mixed number.

(1 mark)

_____

(continued on the next page)

Turn over

5.   continued.

(d) Work out the difference between

$\dfrac{19}{20}$ and $0\cdot68$

Give your answer as a decimal.

(2 marks)

(Total for Question 5 is 5 marks)

Turn over

6. Here are the first five terms of a number sequence.

3   7   11   15   19

(a) Write down the next term of the sequence.

(1 mark)

_____

(b) Explain how you worked out your answer.

(1 mark)

_____

_____

(continued on the next page)

6. continued.

(c) Find the first number greater than **70** that is in the sequence.

(2 marks)

_____

(continued on the next page)

6.   continued.

Ada says,

"**96** is a number in the sequence"

(d) Is Ada correct?

You must give a reason for your answer.

(1 mark)

_____

_____

_____

(Total for Question 6 is 5 marks)

Turn over

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

    It shows three points, A, B and C, marked on a grid.

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

        (1 mark)

        (_____ , _____)

    The coordinates of the point D are (−2, −4)

    (b) **On the grid, mark the position of D**

        Label the point D

        (1 mark)

(continued on the next page)

7.   continued.

   (c)   Find the coordinates of the midpoint of **BC**

        (2 marks)

        (_____ , _____)

   (d)   On the grid, draw the line with equation $x = 4$

        (1 mark)

(Total for Question 7 is 5 marks)

Turn over

8. Look at the table for Question 8 in the Diagram Book.

   Lucas is going on a country walk.

   Lucas works out how long each part of his walk will take.

   This information is shown in the table in the Diagram Book.

   Lucas leaves home at **11 10**

   At what time will Lucas get home?

   (3 marks)

   Answer space continues on the next page.

Turn over

8. **continued.**

(Total for Question 8 is 3 marks)

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

   It shows a conversion graph to change between metres and feet.

   (a) **Use the graph to change**

       (i)   **20** metres to feet,

       _____ feet

       (ii)   **50** feet to metres.

       _____ metres

   (2 marks)

(continued on the next page)

9.   continued.

Joss lives **820** metres above sea level.

Nicky lives **2850** feet above sea level.

(b) Which is the greater, **820** metres or **2850** feet?

You must show how you get your answer.

(2 marks)

(Total for Question 9 is 4 marks)

Turn over

10. Look at the table for Question 10 in the Diagram Book.

Hugo records the number of pairs of trainers sold in each of four shoe shops last Saturday.

He is going to draw a pie chart for his results.

The incomplete table in the Diagram Book shows two of Hugo's results and the sizes of three of the angles in his pie chart.

Complete the table.

There are three spaces to fill.

(4 marks)

Working out space continues on the next page.

10. continued.

(Total for Question 10 is 4 marks)

Turn over

11. **Work out**

23% of **450** millilitres.

_____ millilitres

(Total for Question 11 is 2 marks)

Turn over

12. (a)   Write down all the factors of **9**

(1 mark)

_____

(continued on the next page)

12. **continued.**

    (b) **Find the lowest common multiple (LCM) of**

      15 and 70

      (2 marks)

_____

(Total for Question 12 is 3 marks)

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

    It is NOT accurately drawn.

    It shows the plan of Sophia's gym floor labelled
    ABCD

    AB = 20 metres,
    AD = 12 metres,
    DC = 26 metres.

    All the marked angles are right angles.

    Sophia is going to paint all the gym floor.

    Each tin of paint she is going to use covers an area
    of **20 m^2**

    There is a special offer on the paint that Sophia is
    going to buy.

    SPECIAL OFFER

    1 tin for **$13**

    4 tins for **$40**

Turn over

13. continued.

Work out the least amount of money that Sophia has to pay in order to buy all the paint she needs.

Show your working clearly.

$_____

(Total for Question 13 is 5 marks)

14. (a) Factorise

$$25x - 10$$

(1 mark)

_____

(b) Make **y** the subject of the formula

$$p = 5y - w$$

(2 marks)

_____

(continued on the next page)

Turn over

14. continued.

   (c) Solve the inequality

   4t + 7 > 2

   (2 marks)

_____

(Total for Question 14 is 5 marks)

Turn over

15. **Show that**

$$\frac{2}{5} \div \frac{11}{20} = \frac{8}{11}$$

(Total for Question 15 is 2 marks)

Turn over

16. Look at the table for Question 16 in the Diagram Book.

It shows information about the lengths of time, in minutes, **120** customers spent in a supermarket.

(a) Write down the modal class.

(1 mark)

_____

Turn over

16. continued.

(b) **Work out an estimate for the mean length of time spent by the 120 customers in the supermarket.**

(4 marks)

_____ **minutes**

(Total for Question 16 is 5 marks)

17. **Look at the information for Question 17 in the Diagram Book.**

   It shows a list of ingredients needed to make apple crumble for 6 people.

   Nadiya wants to make apple crumble for 14 people.

   (a) **Work out the amount of butter she needs.**

   (2 marks)

   _____ **grams**

(continued on the next page)

Turn over

17. continued.

Alison makes apple crumble for a group of people.

She uses **630** grams of oats.

(b) Work out the number of people in the group.

(2 marks)

_____

(continued on the next page)

17. **continued.**

At a cake sale, Michael sells some lemon cakes and some chocolate cakes.

the number of lemon cakes he sells : the number of chocolate cakes he sells $= 2 : 7$

Michael sells a total of **162** cakes.

(c) Work out the number of lemon cakes Michael sells.

(2 marks)

_____

(Total for Question 17 is 6 marks)

Turn over

18. Look at the diagram for Question 18 in the

    Diagram Book.

    It is NOT accurately drawn.

    It shows a parallelogram **ABCD** and an isosceles

    triangle **DEF** in which **DE = DF**

    CDF and **ADE** are straight lines.

    Angle **BCD = 58°**

    Work out the size of angle **DEF**

    Give a reason for each stage of your working.

    (5 marks)

    Answer space continues on the next page.

18. continued.

_____°

(Total for Question 18 is 5 marks)

19. Andreas, Isla and Paulo share some money in the ratios $3:2:5$

The TOTAL amount of money that Isla and Paulo receive is **£76** more than the amount of money that Andreas receives.

Andreas buys a video game for **£48·50** with some of his share of the money.

Work out how much money Andreas has left from his share of the money when he has bought the video game.

(4 marks)

Answer space continues on the next page.

19. continued.

£_____

(Total for Question 19 is 4 marks)

20. Himari's annual salary is **3 130 000** Japanese Yen **(JPY)**

She gets a salary increase of **4%**

    (a) Work out Himari's salary after this increase.

         (3 marks)

_____ **JPY**

Turn over

20. continued.

Kaito bought a car.

The value of the car when Kaito bought it was

750 000 JPY

At the end of each year, the value of his car had depreciated by **15%**

(b) Work out the value of Kaito's car at the end of **3** years.

Give your answer correct to the nearest **JPY**

(3 marks)

Answer space continues on the next page.

20. (b) continued.

_____ **JPY**

(Total for Question 20 is 6 marks)

Turn over

21. (a) Simplify

$$m^6 \times m^4$$

(1 mark)

_____

(b) Simplify

$$(3pq^4)^2$$

(2 marks)

_____

(continued on the next page)

21. **continued.**

(c) **Solve the simultaneous equations**

$$4x + 3y = 17$$
$$x + 2y = 5$$

Show clear algebraic working.

(3 marks)

Answer space continues on the next page.

21. (c) continued.

x = _____

y = _____

(Total for Question 21 is 6 marks)

22. Look at the diagram for Question 22 in the

  Diagram Book.

  It is NOT accurately drawn.

  It shows a right–angled triangle **ABC**

  AC = 3·4 cm

  CB = 4·7 cm

  Angle **ACB** is a right angle.

  Angle **ABC** is marked x°

  Calculate the value of **x**

  Give your answer correct to one decimal place.

  (3 marks)

  Answer space continues on the next two pages.

22. continued.

22. continued.

x = _____

(Total for Question 22 is 3 marks)

23. Look at the diagram for Question 23 in the Diagram Book.

It is NOT accurately drawn.

It shows an isosceles triangle **PQR**

PQ = PR = 8·5 cm

RQ = 8 cm

Work out the area of the triangle.

(4 marks)

Answer space continues on the next page.

23. continued.

_____ **cm^2**

(Total for Question 23 is 4 marks)

24. Look at the diagram for Question 24 in the

    Diagram Book.

    You may be provided with a model.

    They are NOT accurate.

    They show a solid cylinder with radius **3** metres.

    The volume of the cylinder is $72\pi\text{m}^3$

    Calculate the TOTAL surface area of the cylinder.

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

    (5 marks)

    Answer space continues on the next page.

24. **continued.**

_____ m^2

(Total for Question 24 is 5 marks)

TOTAL FOR PAPER IS 100 MARKS

END OF PAPER