Total Marks

Mathematics A

Level 1/2
Paper 1F
(Calculator)
Foundation Tier

Tuesday 21 May 2019 – 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	

Q58366A

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.

You may be provided with a shape for Question 11(a)

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 THREE questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

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

From the eight numbers in the box, write down

(a)   **an odd number**

   (1 mark)

_____

(b)   **a multiple of 12**

   (1 mark)

_____

1. continued.

(c) a square number

(1 mark)

_____

(d) a prime number

(1 mark)

_____

(Total for Question 1 is 4 marks)

Turn over

2.   Complete the following statements by writing a number on each line.

(a)   A pentagon has _____ sides.

(1 mark)

(b)   The size of each angle in an equilateral triangle

is _____ °

(1 mark)

(c)   1 kilometre = _____ metres.

(1 mark)

(Total for Question 2 is 3 marks)

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

    It gives the surface areas, in square kilometres,
    of six lakes in Africa.

    (a) Which of these lakes has the least surface
         area?
         (1 mark)

    _____

    (b) Write the number
         6405 in words.
         (1 mark)

    _____

    _____

(continued on the next page)

3.   continued.

(c) Write the number

68 879 correct to the nearest thousand.

(1 mark)

_____

(continued on the next page)

3.   continued.

Sammy says that the surface area of Lake Malawi is about $5\frac{1}{2}$ times the surface area of Lake Albert.
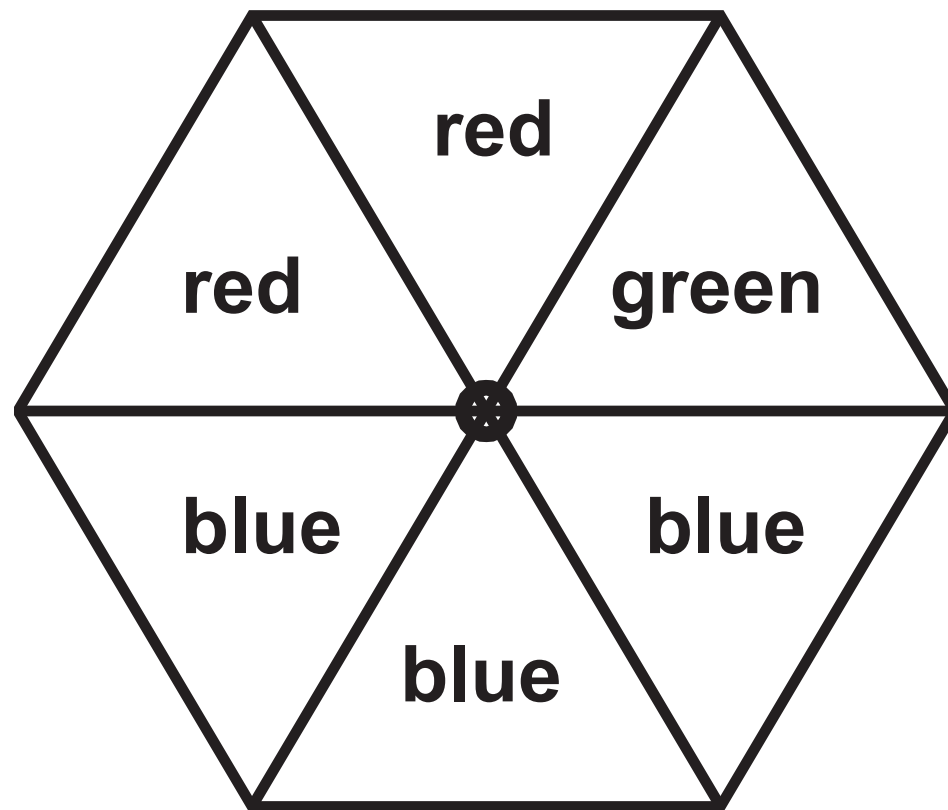
(d) Is Sammy correct?

Give a reason for your answer.

(2 marks)

_____

_____

_____

(Total for Question 3 is 5 marks)

Turn over

4.   The diagram below shows a fair **6**−sided spinner.

red

red

green

blue

blue

blue

Rami is going to spin the spinner once.

(a)   Look at the diagram for Question 4(a) in the
       Diagram Book.
       Circle the word in the box that best describes
       the likelihood that the spinner will land on
       green.
       (1 mark)

(continued on the next page)

4.   continued.

(b) Look at the diagram for Question 4(b) in the

Diagram Book.

On the probability scale, mark the probability

that the spinner will land on blue.

(1 mark)

(c) Look at the diagram for Question 4(c) in the

Diagram Book.

On the probability scale, mark the probability

that the spinner will land on yellow.

(1 mark)

(Total for Question 4 is 3 marks)

5. There are **12 481** people at a concert.

8906 of these people are adults.

The rest of the people are children.

$\dfrac{3}{5}$ of the children are boys.

Work out the number of girls at the concert.

_____

(Total for Question 5 is 4 marks)

6.   (a) **Simplify**

6e × 2f

(1 mark)

_____

(b) **Simplify**

5m + 7k − 2m + k

(2 marks)

_____

(continued on the next page)

6. continued.

(c) Solve

$$5y + 3 = 14$$

(2 marks)

y = _____

(Total for Question 6 is 5 marks)

7.   Look at the information for Question 7 in the

Diagram Book.

It shows the shoe sizes of **11** people.

(a) Write down the mode.

(1 mark)

_____

(b) Work out the range.

(2 marks)

_____

(continued on the next page)

7. **continued.**

    (c) **Find the median.**

       (2 marks)

_____

(continued on the next page)

7.   continued.

Clark works in a shoe shop.

On Tuesday morning he sold some pairs of shoes.

The mean price of the pairs of shoes was **£34**

On Tuesday afternoon he sold only two pairs of shoes.

The prices of these pairs of shoes were **£31** and **£49**

(d) Is the mean price of all the pairs of shoes Clark sold on Tuesday more or less than **£34**?

You must give a reason for your answer.

(1 mark)

_____

_____

_____

_____

_____

(Total for Question 7 is 6 marks)

Turn over

8. **Look at the diagram for Question 8 in the Diagram Book.**

   It is NOT accurately drawn.

   It shows two triangles, CDB and BDA

   DC = DB

   Angle **ABC = 90°**

   Angle **CDB = 116°**

   Angle **DAB = 55°**

   Angle **CDA** is marked **x**

   Work out the size of the angle marked x

   Give a reason for each stage of your working.

   (5 marks)

   Answer space continues on the next page.

8.   **continued.**

$$\underline{\hspace{6cm}}\,{}^{\circ}$$

(Total for Question 8 is 5 marks)

9. (a) **Write these four fractions in order of size.**

Start with the smallest fraction.

$$\frac{7}{10} \qquad \frac{4}{5} \qquad \frac{1}{2} \qquad \frac{29}{40}$$

(2 marks)

_____

(continued on the next page)

9.   continued.

(b) Show that

$$\frac{8}{15} + \frac{3}{10} = \frac{5}{6}$$

(2 marks)

(continued on the next page)

Turn over

9. **continued.**

(c) **Show that**

$$4\frac{2}{3} \div 1\frac{1}{9} = 4\frac{1}{5}$$

(3 marks)

(Total for Question 9 is 7 marks)

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

The pictogram gives information about the number of emails Sami sent on each of five days last week.

Work out the mean number of emails Sami sent on these **5** days.

(4 marks)

Answer space continues on the next page.

10. continued.

(Total for Question 10 is 4 marks)

11. (a) Look at the diagram for Question 11(a) in the

Diagram Book.

It shows a triangle on a coordinate grid.

On the grid, rotate the triangle **180°**

about **(7, 6)**

A cut out shape may be available for this

question.

(2 marks)

(continued on the next page)

11. continued.

(b) Look at the diagram for Question 11(b) in the Diagram Book.

It shows triangle P and triangle Q on a coordinate grid.

Describe fully the single transformation that maps triangle P onto triangle Q

(2 marks)

_____

_____

_____

(Total for Question 11 is 4 marks)

12. (a) Use your calculator to work out the value of

$$\frac{24 \cdot 3 - 16 \cdot 8}{0 \cdot 18} + \sqrt{67 \cdot 4}$$

Write down all the figures on your calculator display.

(2 marks)

_____

(continued on the next page)

Turn over

12. continued.

(b) Write your answer to part (a) correct to

1 significant figure.

(1 mark)

_____

(Total for Question 12 is 3 marks)

Turn over

13. Each exterior angle of a regular polygon is **24°**

Work out the number of sides of the polygon.

_____

(Total for Question 13 is 2 marks)

14. **(a)** **Find the highest common factor (HCF) of 40 and 64**

(2 marks)

———————————————

Turn over

14. continued.

(b) Write $8A$ as a product of powers of its prime factors when

$A = 2^n \times 3 \times 5^m$

(2 marks)

(Total for Question 14 is 4 marks)

Turn over

15. Look at the diagram for Question 15 in the Diagram Book.

    Jalina left her home at **10 00** to cycle to a park.

    On her way to the park, she stopped at a friend's house and then continued her journey to the park.

    The diagram shows the distance–time graph for her journey to the park.

    (a) On her journey to the park, did Jalina cycle at a faster speed before or after she stopped at her friend's house?

    Give a reason for your answer.

    (1 mark)

    _____

    _____

    _____

    _____

    _____

(continued on the next page)

Turn over

15. **continued.**

Jalina stayed at the park for **45** minutes.

She then cycled, without stopping, at a constant

speed of **16 km/h** from the park back to her home.

(b) Show all this information on the distance–time

graph.

(2 marks)

Turn over

15. continued.

(c) Work out Jalina's average cycling speed, in kilometres per hour, for the complete journey to the park and back.

Do NOT include the times when she was not cycling in your calculation.

Give your answer correct to **1** decimal place.

(3 marks)

Answer space continues on the next page.

15. (c) **continued.**

_____ **km/h**

(Total for Question 15 is 6 marks)

16. (a) Work out the value of **P** when

g = 7 and **h = − 4** given that

P = 2g + 3h

(2 marks)

_____

(continued on the next page)

16. **continued.**

   (b) **Simplify**

$$e^9 \div e^5$$

   (1 mark)

_____

   (c) **Simplify**

$$(x^2)^8$$

   (1 mark)

_____

(continued on the next page)

16. **continued.**

    (d) **Expand and simplify**

$$(y + 9)(y - 2)$$

    (2 marks)

_____

(continued on the next page)

Turn over

16. continued.

(e) Factorise fully

$$16c^4p^2 + 20cp^3$$

(2 marks)

_____

(Total for Question 16 is 8 marks)

17. **In a box,**

number of red buttons : number of blue buttons

= 5 : 3

number of blue buttons : number of green buttons

= 1 : 2

There are 48 green buttons in the box.

Work out the number of red buttons in the box.

(4 marks)

Answer space continues on the next page.

17. continued.

(Total for Question 17 is 4 marks)

18. (a) Complete the table of values below for

$$y = x^2 - 3x - 1$$

There are four spaces to fill.

(2 marks)

x	y
−2	
−1	
0	−1
1	
2	−3
3	
4	3

(continued on the next page)

Turn over

18. continued.

(b) Look at the diagram for Question 18(b) in the Diagram Book.

On the grid, draw the graph of $y = x^2 - 3x - 1$

for all values of x from -2 to 4

(2 marks)

(Total for Question 18 is 4 marks)

Turn over

19. Look at the table for Question 19 in the Diagram Book.

Becky has a biased **6**–sided dice.

The table gives information about the probability that, when the dice is thrown, it will land on each number.

Becky is going to throw the dice **200** times.

Work out an estimate for the number of times that the dice will land on an even number.

(4 marks)

Answer space continues on the next two pages.

Turn over

19. continued.

19. continued.

(Total for Question 19 is 4 marks)

Turn over

20. Look at the diagram for Question 20 in the Diagram Book.

It is NOT accurately drawn.

It shows a solid cuboid made from wood.

The cuboid has length **12 cm**, width **5 cm** and height **8 cm**

The wood has density **$0 \cdot 7$ g/cm^3**

Work out the mass of the cuboid.

(3 marks)

Answer space continues on the next page.

Turn over

20. **continued.**

_____ **grams**

(Total for Question 20 is 3 marks)

Turn over

21. **(a)** **Write**

$5 \cdot 7 \times 10^6$ **as an ordinary number.**

(1 mark)

_____

(b) **Write**

$0 \cdot 004$ **in standard form.**

(1 mark)

_____

(continued on the next page)

Turn over

21. **continued.**

(c) Work out

$$\frac{2 \times 10^4 + 3 \times 10^5}{6 \cdot 4 \times 10^{-2}}$$

(2 marks)

_____

(Total for Question 21 is 4 marks)

Turn over

22. On **1**st January **2016** Li bought a boat for

$170 000

The value of the boat depreciates by **8%** per year.

Work out the value of the boat on **1**st January **2019**

Give your answer correct to the nearest dollar.

$ _____

(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 a shape made from a right–angled triangle

    and a semicircle.

    AC is the diameter of the semicircle.

    BA = BC = 6 cm

    Angle **ABC = 90°**

    Work out the area of the shape.

    Give your answer correct to **1** decimal place.

    (5 marks)

    Answer space continues on the next page.

23. continued.

_____ cm^2

(Total for Question 23 is 5 marks)

TOTAL FOR PAPER IS 100 MARKS

END OF PAPER