Total Marks

Mathematics A

PAPER 1F
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	

X65913RA

Pearson

YOU MUST HAVE

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

YOU WILL BE GIVEN

Diagram Booklet
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 12(b)

You may be provided with a model for Question 22

There may be spare copies of some diagrams in case you need them.

ADVICE

Read each question carefully before you start to answer it.

Check your answers if you have time at the end.

Answer ALL TWENTY TWO 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(a) in the Diagram Booklet.

It shows five fractions.

Two of the fractions in the table are equivalent to $\dfrac{1}{5}$

(a) Mark the box beside each of these two fractions.

(2 marks)

(continued on the next page)

1.	continued.

Look at the diagram for Question 1(b) and Question 1(c) in the Diagram Booklet.

It shows an 8−sided polygon and its diagonals.

(b)	Write down the mathematical name of an 8−sided polygon.

(1 mark)

_____

(c)	Shade $\frac{3}{4}$ of the polygon shown in the diagram in the Diagram Booklet.

(1 mark)

(continued on the next page)

Turn over

1.   continued.

The area of a polygon is $56\,\text{cm}^2$

(d)   Find $\dfrac{3}{4}$ of 56

(2 marks)

_____

(Total for Question 1 is 6 marks)

2. **Look at the table for Question 2 in the Diagram Booklet.**

   It shows the average number of spectators per match, for each of five Spanish football teams, in one season.

   (a) **Which team had the lowest average number of spectators per match?**

   (1 mark)

   _____

   (b) **Write the number 65 731 correct to the nearest thousand.**

   (1 mark)

   _____

(continued on the next page)

Turn over

2. continued.

(c) Write down the value of the **6** in the

number **38 699**

(1 mark)

_____

In one match, Sevilla played Valencia.

In the match, Sevilla had **8** shots on target and

Valencia had **12** shots on target.

(d) Write the ratio **8 : 12** in its simplest form.

(1 mark)

_____

(continued on the next page)

Turn over

2. **continued.**

In the same match, Valencia had **72%** possession of the ball.

(e) Write **72%** as a fraction in its simplest form.

(2 marks)

_____

(Total for Question 2 is 6 marks)

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

It shows a bar chart which gives information about the numbers of text messages that Susan and Philip sent from their mobile phones on each of six days one week.

(a) **On which day did Susan send twice as many text messages as Philip?**

(1 mark)

_____

(b) **How many text messages did Philip send on Sunday?**

(1 mark)

_____

(continued on the next page)

3.   continued.

On Saturday, Susan sent **15** text messages and Philip sent **40** text messages.

(c) Show this information on the bar chart in the Diagram Booklet.

(1 mark)

In the following week, Philip sent a total of **180** text messages.

Of these text messages, **25%** were sent to Susan.

(d) Work out **25%** of **180**

(2 marks)

_____

(Total for Question 3 is 5 marks)

4.   **Look at the table for Question 4 in the Diagram Booklet.**

   It shows the temperatures recorded at midnight and at midday for each of four North American cities on a Monday one week.

   (a) **Which city had the lowest midnight temperature?**

   (1 mark)

   _____

(continued on the next page)

4. continued.

(b) **Find the difference between the midnight temperature and midday temperature for Boston.**

(1 mark)

_____ **°C**

(continued on the next page)

Turn over

4. continued.

From Monday to Thursday, the midday temperature in Detroit increased by $2°C$ each day.

(c) Work out the midday temperature in Detroit on Thursday.

(2 marks)

_____ °C

(Total for Question 4 is 4 marks)

5.   James is on holiday in Canada.

The exchange rate is **£1 = 1·75** Canadian dollars.

(a)   Change **£800** into Canadian dollars.

(2 marks)

_____ Canadian dollars

(continued on the next page)

Turn over

5.   continued.

Remember:

The exchange rate is £1 = 1·75 Canadian dollars.

James buys a watch in Canada.

The price of the watch is 98 Canadian dollars.
In England the price of an identical watch is £60

(b)   Work out the difference in the prices of the
two watches.
Give your answer in pounds (£)
(2 marks)

£_____

(Total for Question 5 is 4 marks)

6.   Look at the diagram for Question 6 in the Diagram Booklet.

It shows an accurate scale diagram of the map of an island drawn on a grid.

The position of Aaron's house is **A**

The position of Bharat's house is **B**

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

(1 mark)

(_____ , _____)

(continued on the next page)

6.   continued.

(b) By measurement, find the bearing of **A** from **B**

(2 marks)

_____°

(c) Measure the length of the line **AB**

Give your answer in centimetres correct to

one decimal place.

(1 mark)

_____ cm

(continued on the next page)

Turn over

6.   continued.

Aaron cycled along a straight path from his house to Bharat's house.

The scale of the map is **1 cm** represents **5 km**

(d)   Work out the distance, in kilometres, that Aaron cycled.

(1 mark)

_____ **km**

(continued on the next page)

6. **continued.**

Aaron left his house at 10 45 am and arrived at Bharat's house at 1 05 pm

(e) How long did Aaron's cycle ride take him?

Give your answer in hours and minutes.

(2 marks)

_____ hours _____ minutes

(Total for Question 6 is 7 marks)

7.   (a) Solve

$$5x = 20$$

(1 mark)

x = _____

(b) Simplify

$$3p \times 8q$$

(1 mark)

_____

(continued on the next page)

7.   continued.

(c) **Simplify**

8w – 4y + w – 3y

(2 marks)

_____

(d) **Factorise fully**

16 + 12t

(2 marks)

_____

(Total for Question 7 is 6 marks)

Turn over

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

It shows information about the grades some Year 9 students gained in a biology test and in a physics test.

The highest grade is A and the lowest grade is D

(a) How many students gained a grade C in biology?

(2 marks)

_____

(continued on the next page)

8.   continued.

(b) How many students gained the same grade in biology as they gained in physics?

(2 marks)

_____

(c) How many students gained a higher grade in biology than they gained in physics?

(2 marks)

_____

(Total for Question 8 is 6 marks)

Turn over

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

   It shows two similar triangles, ABC and AED, drawn on a grid.

   Each square length on the grid represents 1 cm

   Find the area of the region R, shown shaded in the diagram in the Diagram Booklet.

   _____ cm^2

(Total for Question 9 is 3 marks)

10. (a) Show that

$$\frac{3}{10} \div \frac{1}{4} = \frac{6}{5}$$

(2 marks)

(continued on the next page)

Turn over

10. continued.

    (b) Show that

$$\frac{5}{6} - \frac{3}{4} = \frac{1}{12}$$

    (2 marks)

(Total for Question 10 is 4 marks)

Turn over

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

$$\frac{2{\cdot}14^3 - 3{\cdot}76}{\sqrt{1{\cdot}24}}$$

Write down all the figures on your calculator display.

(2 marks)

_____

(continued on the next page)

11. continued.

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

2 significant figures.

(1 mark)

_____

(Total for Question 11 is 3 marks)

12. **Look at the diagram for Question 12 in the Diagram Booklet.**

   It shows shape P and shape Q on a grid.

   (a) **Describe fully the single transformation that maps shape P onto shape Q**

   (3 marks)

   _____

   _____

   _____

   _____

   _____

   (b) **On the grid, reflect shape P in the line with equation x = 5**

   Label your shape R

   A cut out shape may be available if you wish to use it.

   (2 marks)

(Total for Question 12 is 5 marks)

Turn over

13. (a) Simplify

$$m^8 \div m^2$$

(1 mark)

_____

(b) Expand and simplify

$$(y - 3)(y + 1)$$

(2 marks)

_____

(Total for Question 13 is 3 marks)

Turn over

14. **Look at the diagram for Question 14 in the Diagram Booklet.**

    It is NOT accurately drawn.

    It shows a right–angled triangle ABC

    AB = 30 cm

    AC = 52 cm

    BC = h cm

    Angle ABC is a right–angle.

    Calculate the value of h

    Give your answer correct to 3 significant figures.

    (3 marks)

    Answer space continues on the next page.

14. continued.

h = _____

(Total for Question 14 is 3 marks)

15. There are **54** fish in a tank.

Some of the fish are white and the rest of the fish are red.

Jeevan takes at random a fish from the tank.

The probability that he takes a white fish is $\dfrac{4}{9}$

(a) Work out the number of white fish originally in the tank.

(2 marks)

Answer space continues on the next page.

15. (a) continued.

_____

(continued on the next page)

15. continued.

Jeevan puts the fish he took out, back into the tank.

He puts some more white fish into the tank.

Jeevan takes at random a fish from the tank.

The probability that he takes a white fish is now $\dfrac{1}{2}$

(b) Work out the number of white fish Jeevan put into the tank.

(2 marks)

Answer space continues on the next page.

Turn over

15. (b) continued.

_____

(Total for Question 15 is 4 marks)

Turn over

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

It is NOT accurately drawn.

It shows the front of a wooden door with a
semicircular glass window.

The height of the door is 2 metres.

The width of the door is $0 \cdot 75$ metres.

The diameter of the semicircular glass window
is $0 \cdot 5$ metres.

Julie wants to apply 2 coats of wood varnish to the
front of the door, shown shaded in the diagram.

250 millilitres of wood varnish covers 4 m^2 of the
wood.

Work out how many millilitres of wood varnish Julie
will need.

Give your answer correct to the nearest millilitre.

(5 marks)

Answer space is on the next page.

Turn over

16. continued.

_____ **millilitres**

(Total for Question 16 is 5 marks)

17. Look at Diagram 1 and Diagram 2 for Question 17 in the Diagram Booklet.

They are NOT accurately drawn.

Yasmin has some identical rectangular tiles.

Each tile is **L cm** by **W cm** as shown by Diagram 1

Using **9** of her tiles, Yasmin makes rectangle **ABCD**, as shown by Diagram 2

The area of **ABCD** is **1620 cm^2**

Work out the value of **L** and the value of **W**

(5 marks)

Answer space continues on the next page.

17. continued.

L = _____   W = _____

(Total for Question 17 is 5 marks)

18. Alison buys **5** apples and **3** pears for a total cost of **$1·96**

Greg buys **3** apples and **2** pears for a total cost of **$1·22**

Michael buys **10** apples and **10** pears.

Work out how much Michael pays for his **10** apples and **10** pears.

Show your working clearly.

(5 marks)

Answer space continues on the next page.

18. continued.

$ _____

(Total for Question 18 is 5 marks)

19. Write $3 \cdot 6 \times 10^3$ as a product of powers of its prime factors.

Show your working clearly.

_____

(Total for Question 19 is 3 marks)

20. In **2018**, the population of Sydney was **5·48** million.

   This was **22%** of the total population of Australia.

   Work out the total population of Australia in **2018**

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

   _____ million

(Total for Question 20 is 3 marks)

21. (i) Solve the inequalities $-7 \leq 2x - 3 < 5$

(3 marks)

_____

(ii) Look at the diagram for Question 21(ii) in the Diagram Booklet.

It shows a number line.

On the number line, represent the solution set to part (i)

(2 marks)

(Total for Question 21 is 5 marks)

Turn over

22. **Look at the diagram for Question 22 in the Diagram Booklet.**

You may be provided with a model.

They are NOT accurate.

A solid aluminium cylinder has radius 10 cm and height h cm

The mass of the cylinder is 5·4 kg

The density of aluminium is 0·0027 kg/cm^3

Calculate the value of h

Give your answer correct to one decimal place.

(5 marks)

Answer space continues on the next two pages.

22. **continued.**

22. **continued.**

$h =$ _____

(Total for Question 22 is 5 marks)

TOTAL FOR PAPER IS 100 MARKS

END OF PAPER