

Mathematics A  
PAPER 1FR  
Foundation Tier  
(Calculator)

Total Marks
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Thursday 16 May 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 Formulae Booklet**

**A separate Diagram Booklet**

**You may be given models for Question 15 and Question 21.  
They are not accurate.**

**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.**

## **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.**

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**Answer ALL TWENTY FOUR questions.**

**Write your answers in the spaces provided.**

**You must write down all the stages in your working.**

**1. From the numbers listed below,**

**6    15    19    28    38    44    48**

**write down**

**(a) an odd number**

**(1 mark)**

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**(b) a multiple of 12**

**(1 mark)**

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**(continued on the next page)**

**Turn over**

**1. continued.**

**From the numbers listed below,**

**6    15    19    28    38    44    48**

**write down**

**(c) a prime number**

**(1 mark)**

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**(d) a factor of 24**

**(1 mark)**

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**(Total for Question 1 is 4 marks)**

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2. (a) Write 0.13 as a fraction.  
(1 mark)

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- (b) Write a number in the box to make the statement correct.  
(1 mark)

$$\frac{16}{20} = \frac{\boxed{\phantom{000}}}{5}$$

(Total for Question 2 is 2 marks)

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3. (a) Write a number in the box to make the statement correct.

(1 mark)

$$5073 \div \boxed{\phantom{00000}} = 19$$

- (b) Write a number in the box to make the statement correct.

(1 mark)

The cube root of  $\boxed{\phantom{000000000}}$  is 14

(continued on the next page)

**3. continued.**

**(c) Here is a list of five numbers.**

**973    987    393    151    139**

**Work out the difference between the largest  
number in the list and the smallest number in  
the list.**

**(2 marks)**

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**(Total for Question 3 is 4 marks)**

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4. Look at the diagram for Question 4 in the separate Diagram Booklet. The diagram is a pictogram. The pictogram shows information about the numbers of different breeds of dog that Lucy saw in the park.

(a) How many Retrievers did Lucy see in the park?  
(1 mark)

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(b) Lucy saw **10** Spaniels in the park.

Show this information on the pictogram.  
(1 mark)

(continued on the next page)

**4. continued.**

**(c) Lucy saw more Cockapoos than Bulldogs in the park.**

**How many more?**

**(1 mark)**

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**(Total for Question 4 is 3 marks)**

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5. Look at the table for Question 5 in the separate Diagram Booklet. The table gives the average January temperatures for five cities.

Here are the temperatures in  $^{\circ}\text{C}$

−8    24    −3    12    −14

- (a) Write these numbers in order of size.

Start with the smallest number.

(1 mark)

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(continued on the next page)

**5. continued.**

- (b) Work out the difference between the January temperature in Yinchuan and the January temperature in Valencia.**

**(1 mark)**

\_\_\_\_\_ °C

- (c) The January temperature in Winnipeg is 13°C lower than the January temperature in Tallinn.**

**Work out the January temperature in Winnipeg.**

**(1 mark)**

\_\_\_\_\_ °C

**(continued on the next page)**

**Turn over**

**5. continued.**

- (d) The January temperature in Austin is  $25^{\circ}\text{C}$  higher than the January temperature in Saskatoon.**

**Work out the January temperature in Austin.**

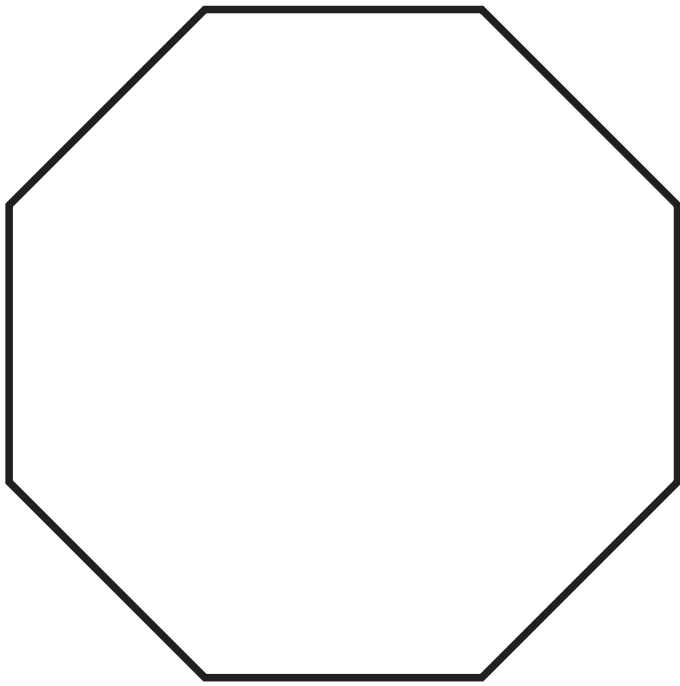
**(1 mark)**

\_\_\_\_\_  $^{\circ}\text{C}$

**(Total for Question 5 is 4 marks)**

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6. (a) The diagram below shows a regular octagon.



Write down the number of lines of symmetry of a regular octagon.

(1 mark)

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(continued on the next page)

**6. continued.**

**Look at the diagram for Question 6 (b) in the separate Diagram Booklet. The diagram shows a shape.**

**(b) On the shape, mark with a letter **R** a right angle.**

**(1 mark)**

**(c) On the shape, mark with a letter **O** an obtuse angle.**

**(1 mark)**

**(d) Find, by measuring, the size of the angle marked **X****

**(1 mark)**



**(Total for Question 6 is 4 marks)**

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7. Look at the diagram for Question 7 in the separate Diagram Booklet. The diagram is NOT accurately drawn. The diagram shows a pie chart.

At a games club, people played chess or mahjong or rummy or whist.

Each person played only one of these games.

Helena starts to draw a pie chart to show information about the games played.

(a) **24** people played mahjong.

Work out the number of people who played chess.  
(2 marks)

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(continued on the next page)

Turn over



**7. continued.**

**(b) 40 people played whist.**

**Work out the size of the angle on the pie chart for the sector representing whist.**

**You do not need to complete the pie chart.**

**(2 marks)**

\_\_\_\_\_ °

**(Total for Question 7 is 4 marks)**

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**8. Marie buys**

**3 birthday cards at \$1.80 each**

**4 sheets of wrapping paper at \$1.20 a sheet**

**2 identical rolls of sticky tape**

**The total cost is \$17.10**

**Work out the cost of one roll of sticky tape.**

**\$ \_\_\_\_\_**

**(Total for Question 8 is 4 marks)**

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**Turn over**

9. Look at the diagram for Question 9 in the separate Diagram Booklet. The diagram shows three points, **A**, **B** and **C**, marked on a grid.

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

(1 mark)

( \_\_\_\_\_ , \_\_\_\_\_ )

(b) Find the coordinates of the midpoint of **AB**

(2 marks)

( \_\_\_\_\_ , \_\_\_\_\_ )

(continued on the next page)

**9. continued.**

**(c) D is the point on the grid so that ABCD is a rectangle.**

**Find the coordinates of D**  
**(2 marks)**

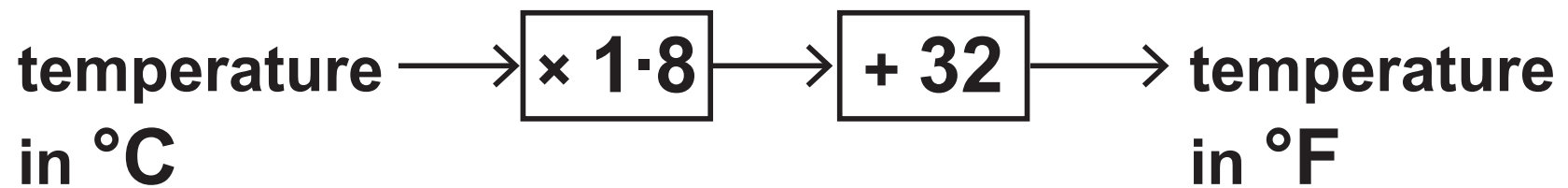
**( \_\_\_\_\_ , \_\_\_\_\_ )**

**(Total for Question 9 is 5 marks)**

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- 10. Charlene is comparing cooking temperatures in degrees Celsius ( $^{\circ}\text{C}$ ) with cooking temperatures in degrees Fahrenheit ( $^{\circ}\text{F}$ )**

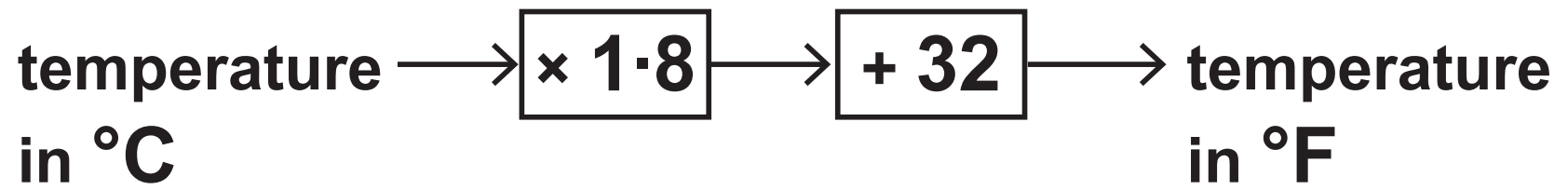
**She finds this rule to change from °C to °F**



- (a) Change a temperature of  $175^{\circ}\text{C}$  to a temperature in  $^{\circ}\text{F}$**   
**(2 marks)**

\_\_\_\_\_ °F

10. continued.



(b) Change a temperature of  $482^\circ\text{F}$  to a temperature in  $^\circ\text{C}$

(2 marks)

\_\_\_\_\_  $^\circ\text{C}$

(Total for Question 10 is 4 marks)

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11. (a) Simplify  $c + c + c + c + c$   
(1 mark)
- 

- (b) Simplify  $7w + 10y - 9w + 2y$   
(2 marks)
- 

(continued on the next page)

11. continued.

(c) The  $n$ th term of a sequence is given by  $7n - 4$

Find the 1st term and the 5th term of the sequence.

(2 marks)

1st term \_\_\_\_\_

5th term \_\_\_\_\_

(continued on the next page)



**11. continued.**

**(d) Solve  $7(p + 5) = 8 - 3p$**

**Show clear algebraic working.**

**(3 marks)**

**p = \_\_\_\_\_**

**(Total for Question 11 is 8 marks)**

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12. Look at the diagram for Question 12 in the separate Diagram Booklet. The diagram is NOT accurately drawn. The diagram shows a quadrilateral **ABCD**. It is joined to a triangle **CDE**. Line **DEF** extends from the triangle.

**ABCD** is a quadrilateral.

**CDE** is an isosceles triangle with **CD = CE**

**DEF** is a straight line.

Angle **ABC** =  $128^\circ$

Angle **BAD** =  $78^\circ$

Angle **ADC** =  $86^\circ$

Angle **CEF** =  $125^\circ$

Work out the size of angle **BCE**

Give a reason for each stage of your working.

(5 marks)

Answer space continues on the next page.

**12. continued.**

**angle BCE = \_\_\_\_\_°**

**(Total for Question 12 is 5 marks)**

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**13. Kye has some toy cars.**

**He has  $n$  red cars.**

**He has twice as many blue cars as red cars.**

**He has 7 more green cars than red cars.**

**(a) Write an expression, in terms of  $n$ , for the total number of red cars, blue cars and green cars that Kye has.**

**Write your answer in its simplest form.**

**(2 marks)**

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**(continued on the next page)**

**Turn over**

**13. continued.**

**(b) The total number of cars that Kye has is  $T$**

**Write an expression, in terms of  $T$  and  $n$ , for the number of cars that Kye has that are NOT red cars, blue cars or green cars.**

**(1 mark)**

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**(Total for Question 13 is 3 marks)**

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14. Use your calculator to work out the value of

$$\frac{\sqrt{17.8 \times 19.2}}{3.4^2 \times 0.23}$$

Write down all the figures on your calculator display.

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(Total for Question 14 is 2 marks)

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Turn over

**15. Look at the diagram for Question 15 in the separate Diagram Booklet. The diagram is NOT accurately drawn. The diagram shows a box and a crate with a lid. You may also be given models.**

**The box is a cube with sides of length 5 cm.**

**Tony has many boxes.**

**The crate is a cuboid with inside lengths of 27 cm, 35 cm and 40 cm.**

**Tony puts as many boxes as possible into the crate so that the lid will shut.**

**Work out the volume of space in the crate that is not filled up with boxes.**

**(4 marks)**

**Answer space continues on the next page.**

15. continued.

\_\_\_\_\_  $\text{cm}^3$

(Total for Question 15 is 4 marks)

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**16. Six cards are shown below.**

**Five of the cards have a number written on them.**

<b>16</b>	<b>15</b>	<b>3</b>	<b>2</b>	<b>9</b>	
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**Work out the number that should be written on the last card so that the mean of the six numbers will be 11**  
**(3 marks)**

**Answer space continues on the next page.**

16. continued.

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**(Total for Question 16 is 3 marks)**

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**17. Look at the diagram for Question 17 in the separate Diagram Booklet. The diagram shows a biased spinner.**

**Look at the table for Question 17 in the separate Diagram Booklet. The table gives information about the probability that, when the spinner is spun once, it will land on each number.**

**Alexis is going to spin the spinner 400 times.**

**Work out an estimate for the number of times the spinner will land on an odd number.**

**(4 marks)**

**Answer space continues on the next page.**

17. continued.

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**(Total for Question 17 is 4 marks)**

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**18. Norberto sells white loaves of bread and brown loaves of bread.**

**He sells a total of 200 loaves such that**

**the number of white loaves sold : the number of brown loaves sold = 3 : 2**

**Norberto sells the white loaves for £1.50 each.**

**He sells the brown loaves for £1.75 each.**

**40% of the price of a white loaf is profit.**

**60% of the price of a brown loaf is profit.**

**Work out Norberto's total profit when he sells all 200 loaves.**

**(5 marks)**

**Answer space continues on the next page.**

18. continued.

£ \_\_\_\_\_

(Total for Question 18 is 5 marks)

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19. Show that  $2\frac{1}{3} \div 5\frac{1}{4} = \frac{4}{9}$

**(Total for Question 19 is 3 marks)**

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**20. Slavomir invests 5200 euros in a savings account for 4 years.**

**He gets 2.5% per year compound interest.**

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

**Give your answer correct to the nearest euro.**

\_\_\_\_\_ euros

**(Total for Question 20 is 3 marks)**

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**21. Look at the diagram for Question 21 in the separate Diagram Booklet. The diagram is NOT accurately drawn. The diagram shows a solid wooden cylinder. You may also be given a model.**

**The cylinder has radius 8 cm and height  $h$  cm.  
The volume of the cylinder is  $1208 \text{ cm}^3$**

**(a) Work out the value of  $h$**

**Give your answer correct to the nearest whole number.**

**(2 marks)**

**$h =$  \_\_\_\_\_**

**(continued on the next page)**

**21. continued.**

**(b) The density of the wood is  $1.25 \text{ g/cm}^3$**

**Work out the mass of the cylinder.**

**Give your answer in kilograms.**

**(2 marks)**

\_\_\_\_\_ kilograms

**(Total for Question 21 is 4 marks)**

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22. (a) Simplify  $g^9 \div g^2$   
(1 mark)
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- (b) Expand  $5k^2(k^3 + 4)$   
(2 marks)
- 

(continued on the next page)

**22. continued.**

- (c) (i) Factorise  $x^2 - 2x - 63$**   
**(2 marks)**

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- (ii) Hence, solve  $x^2 - 2x - 63 = 0$**   
**(1 mark)**

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**(continued on the next page)**

**Turn over**

**22. continued.**

- (d) Solve the inequality  $7 - 2y < 3y - 12$**   
**(3 marks)**

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**(Total for Question 22 is 9 marks)**

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**23. Look at the diagram for Question 23 in the separate Diagram Booklet. The diagram is NOT accurately drawn. The diagram shows a trapezium, ABCD**

**In the diagram:**

**DAB and ADC are right angles.**

**AD = 15 cm**

**DC = 14 cm**

**The area of the trapezium is  $360 \text{ cm}^2$**

**Work out the perimeter of the trapezium.**

**(6 marks)**

**Answer space continues on the next page.**

**23. continued.**

\_\_\_\_\_ cm

**(Total for Question 23 is 6 marks)**

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**24. Look at the diagram for Question 24 in the separate Diagram Booklet. The diagram shows a coordinate grid. Line L is drawn on the grid.**

**Find an equation for L**

**Give your answer in the form  $y = mx + c$**

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**(Total for Question 24 is 3 marks)**

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**TOTAL FOR PAPER IS 100 MARKS**

**END OF PAPER**

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