

Please write clearly in block capitals.

Centre number 

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Candidate number 

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Surname \_\_\_\_\_

Forename(s) \_\_\_\_\_

Candidate signature \_\_\_\_\_

I declare this is my own work.

# GCSE MATHEMATICS

Foundation Tier

Paper 1 Non-Calculator

**F**

Friday 19 May 2023

Morning

Time allowed: 1 hour 30 minutes

## Materials

For this paper you must have:

- mathematical instruments
- the Formulae Sheet (enclosed).

You must **not** use a calculator.



## Instructions

- Use black ink or black ball-point pen. Draw diagrams in pencil.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
- You must answer the questions in the spaces provided. Do not write outside the box around each page or on blank pages.
- If you need extra space for your answer(s), use the lined pages at the end of this book. Write the question number against your answer(s).
- Do all rough work in this book. Cross through any work you do not want to be marked.

## Information

- The marks for questions are shown in brackets.
- The maximum mark for this paper is 80.
- You may ask for more answer paper, graph paper and tracing paper. These must be tagged securely to this answer book.

## Advice

In all calculations, show clearly how you work out your answer.

For Examiner's Use	
Pages	Mark
2–3	
4–5	
6–7	
8–9	
10–11	
12–13	
14–15	
16–17	
18–19	
20–21	
22	
<b>TOTAL</b>	

1 Here is a list of numbers.

14    9    20    29    3    45    33

1 (a) Which number in the list is a multiple of 4 ?

[1 mark]

**20**

Answer \_\_\_\_\_

1 (b) Which number in the list is a square number?

[1 mark]

**9**

Answer \_\_\_\_\_



J U N 2 3 8 3 0 0 1 F 0 1

**8300/1F**



0 2

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1 (c) Which **two** numbers in the list have a total of 43 ?

[1 mark]

Answer

14 and 29

Do not write outside the box

1 (d) Work out

largest number in the list  $\div$  smallest number in the list

[1 mark]

$45 \div 3$

Answer

15

2 (a) Here is a square.

Do not write outside the box



Use a ruler to measure a side length of the square.

Give your answer in **millimetres**.

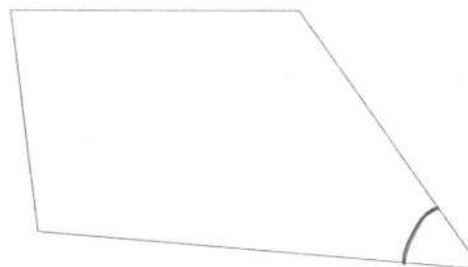
[1 mark]

ms 54  $\rightarrow$  58

Answer

mm

2 (b) Here is a quadrilateral.



Use a protractor to measure the size of the **smallest** angle.

[1 mark]

ms 48  $\rightarrow$  52

Answer

Turn over for the next question

4

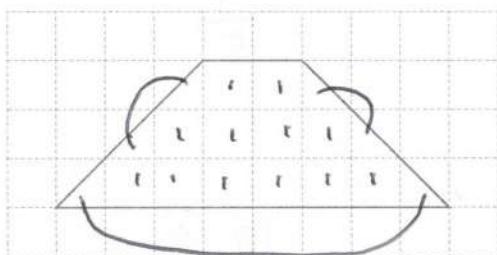
Turn over ►



0 3



2 (c) A different quadrilateral is drawn on a centimetre grid...



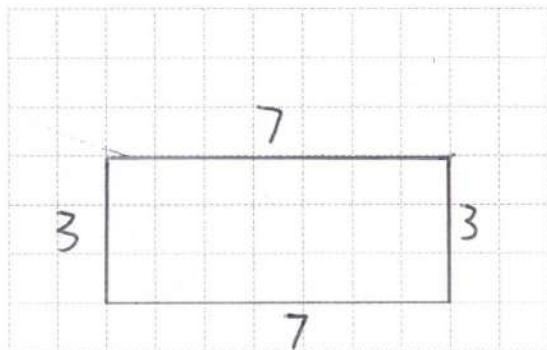
Do not write outside the box.

By counting squares, work out the **area** of the quadrilateral.

[1 mark]

Answer 15  $\text{cm}^2$

2 (d) One side of a rectangle is drawn on this centimetre grid.



Complete the rectangle so that it has a **perimeter** of 20 cm.

[1 mark]



Turn over ►

3 (a) Work out  $(-4) \times (-3)$

[1 mark]

12

Answer

3 (b) Work out  $6 \times (-5)$

[1 mark]

- 30

Answer

3 (c) Work out  $(-8)^2$

[1 mark]

$$\begin{aligned} -8 \times -8 \\ = 64 \end{aligned}$$

Answer

3 (d) Work out  $10^3$

[1 mark]

$$\begin{aligned} 10 \times 10 \times 10 \\ = 1000 \end{aligned}$$

Answer



0 5



0 6

Do not write outside the box.

4 Write  $18$  out of  $30$  as a fraction in its simplest form.

[2 marks]

Do not write outside the box

$$\begin{array}{r} 18 \\ \hline 30 \\ \hline \end{array} \quad \begin{array}{r} \div 6 \\ \hline \end{array}$$

Answer

$$\begin{array}{r} 3 \\ \hline 5 \end{array}$$

5 At a shop

the normal price of one pen is 24p

the normal price of one calculator is £7

The shop has these special offers.

Pens

Half the normal price

Calculators

£1.50 less than the normal price

Work out the total price of 5 pens and 1 calculator using the special offers.

[4 marks]

$$5 \text{pens} = 5 \times 12 = 60p$$

$$1 \text{calc} = 550p$$

$$\underline{\underline{610p}}$$

Answer £

$$6.10$$

10

Turn over ►



0 7

6 (a) Write  $3\frac{2}{5}$  as an improper fraction.

$$\begin{array}{r} 17 \\ \hline 5 \end{array}$$

[1 mark]

Answer

6 (b) Write 0.19 as a fraction.

$$\begin{array}{r} 19 \\ \hline 100 \end{array}$$

[1 mark]

Answer

Do not write outside the box



0 8

7

Misha recorded the main type of weather each day for **55 days**.

The pictogram shows the results for rain, snow and cloud.

Key:  = 4 days

Rain					16
Snow					10
Cloud					18
Sun					6
Fog					5

Sun was recorded on 1 **more** day than fog.Complete the pictogram for the **55 days**.

[4 marks]

$$16 + 10 + 18 = 44$$



8

$$T = 5P - W$$

Do not write outside the box

8 (a) Work out the value of  $T$  when  $P = 4$  and  $W = 2$

[2 marks]

$$\begin{array}{r} T = 5 \times 4 - 2 \\ = 20 - 2 \end{array}$$

$$T = \underline{\hspace{2cm}} 18 \underline{\hspace{2cm}}$$

8 (b) Work out the value of  $P$  when  $T = -40$  and  $W = 10$

[3 marks]

$$\begin{array}{r} -40 = 5P - 10 \\ -30 = 5P \end{array}$$

$$P = -30 \div 5$$

$$P = \underline{\hspace{2cm}} -6 \underline{\hspace{2cm}}$$

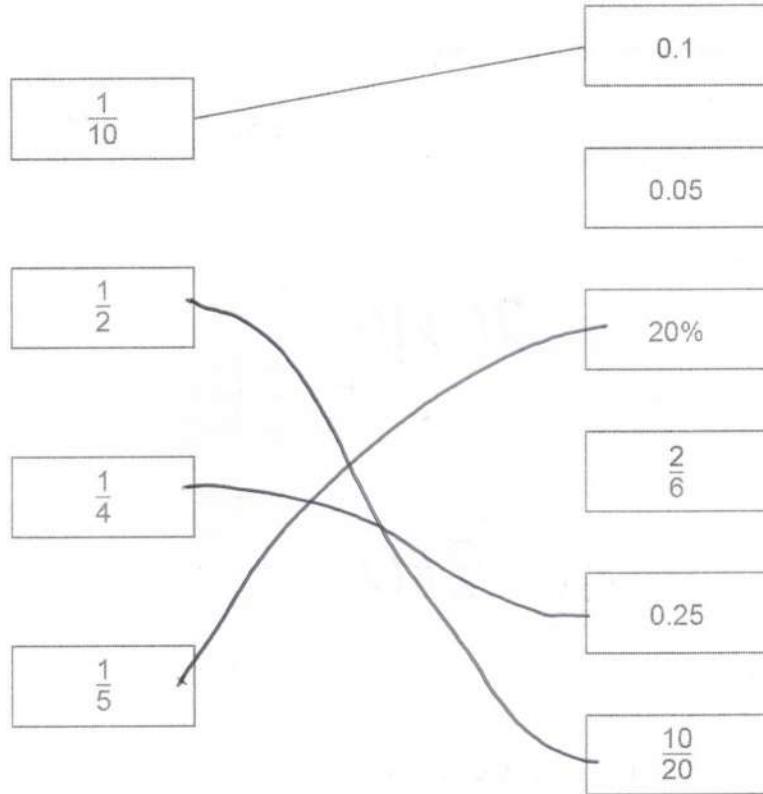


1 0

9 Match each box on the left to the box on the right with the same value.  
One has been done for you.

[3 marks]

Do not write outside the box



Turn over for the next question



10

Here are two calculations, A and B.

A	$8 \times 3 + 2$
B	$21 - (15 - 4)$

$$= 24 + 2 = 26$$

$$= 21 - 11 = 10$$

Work out answer to A  $\times$  answer to B

[3 marks]

$$26 \times 10$$

Answer 260

11

Convert 7 gallons to litres.

Use 1 gallon = 4.5 litres

[2 marks]

$$\begin{array}{r}
 45 \\
 \times 37 \\
 \hline
 315
 \end{array}$$

$$31.5$$

Answer 31.5

litres



12

The table shows monthly payments for electricity.

Do not write outside the box

October	November
£120	£240

Write down the percentage increase from October to November.

[1 mark]

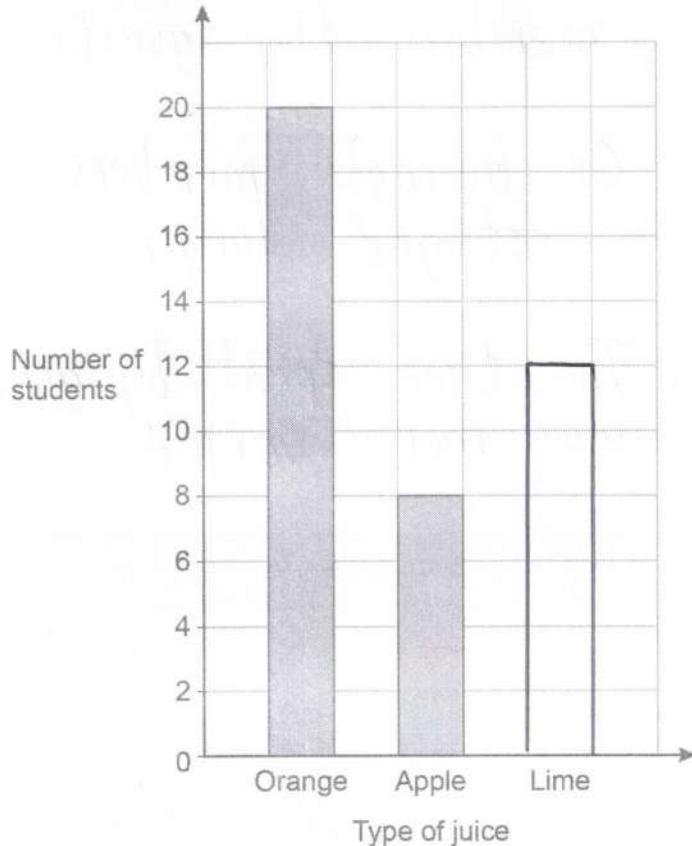
100

Answer \_\_\_\_\_ %

13

Students choose juice with their school meal in the ratio

orange : apple : lime = 5 : 2 : 3



O A L  
5 2 3  
(x4)  
20 8 12

Complete the bar chart.

[3 marks]

9

Turn over ►



1 3

14

Here is some data about people visiting a gym one week.

	① Percentage of all visitors	② Mean number of hours visiting	③ Range of number of hours visiting
Members	64	4	6
Guests	36	$2\frac{1}{2}$	8

Compare the data for the members with the data for the guests.

Make **three** comparisons.

[3 marks]

Comparison 1

There were more  
members than guests

Comparison 2

On average members  
stayed longer

Comparison 3

The time spent by guests  
was more varied



1 4

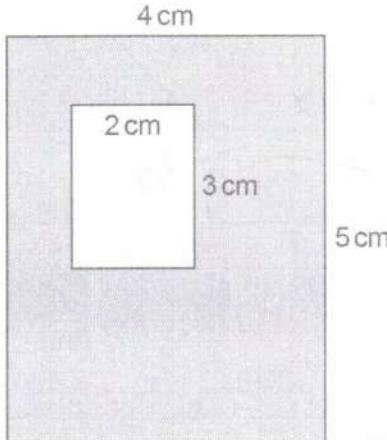
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15 A large rectangle has a rectangular hole cut out.

Do not write outside the box

$$5 \times 4 = 20$$

$$3 \times 2 = 6$$



Work out the percentage of the large rectangle that is shaded.

[3 marks]

$$\text{Shaded} = 20 - 6 = 14$$

$$\frac{14}{20} = \frac{70}{100}$$

Answer

70

%

16 Liz travels 18 miles in 20 minutes.

Work out her average speed in miles per hour.

[3 marks]

$$18 \times 3 = 54 \text{ miles in 60 mins}$$

Answer

54

mph

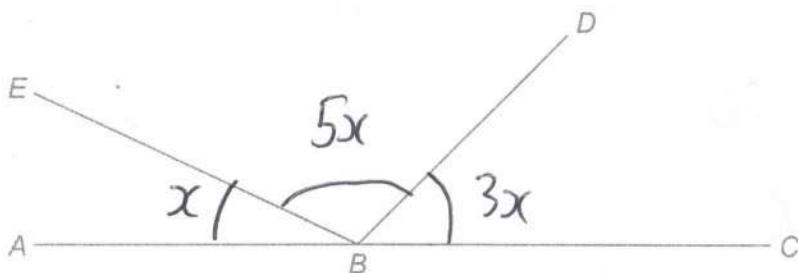
9

Turn over ►



17

ABC, BD and BE are straight lines.

Do not write  
outside the  
boxNot drawn  
accurately

$$\text{angle } EBD = 5 \times \text{angle } ABE$$

$$\text{angle } DBC = 3 \times \text{angle } ABE$$

Work out the size of angle EBD.

[3 marks]

$$9x = 180$$

$$x = 20$$

$$EBD = 5x = 5 \times 20$$

$$100$$

Answer



1 6

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18

Two prime numbers are multiplied together.

The answer is an even number between 50 and 60

Complete the calculation.

[3 marks]

$$\boxed{2} \times \boxed{29} = \boxed{58}$$

②, 3, 5, 7, 11, 13, 17, 19, 23, 29

$\times \quad \times \quad \times$

19

Andrew and Bruce share some money in the ratio 5 : 6

Bruce gets £96

Andrew gives  $\frac{1}{4}$  of his share to Carl.Bruce gives  $\frac{2}{3}$  of his share to Carl.

How much money does Carl receive?

$$6) \overline{96}$$

$$\begin{array}{r} 16 \\ 3 \times 5 \\ \hline 80 \end{array}$$

[4 marks]

A : B

5 : 6

↓

) x16

8096

$$\frac{1}{4} \text{ of } 80 = \underline{\underline{20}}$$

$$\frac{1}{3} \text{ of } 96 = \underline{\underline{32}}$$

$$32 \times 2 = \underline{\underline{64}}$$

84

Answer £ \_\_\_\_\_

10

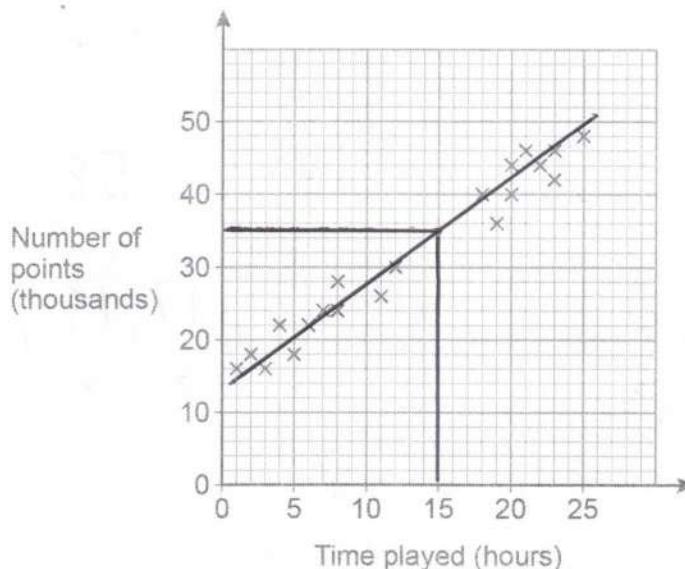
Turn over ►



20

Players score points in a game.

The scatter graph shows the time played and the points scored by some players.



20 (a)

Circle the strength and type of correlation shown.

[1 mark]

weak positive

strong positive

weak negative

strong negative

20 (b)

Players get one extra life for every 2000 points they score.

Jonah plays the game for 15 hours.

Use a line of best fit to estimate the number of extra lives he gets.

[3 marks]

$$\frac{35000 \text{ pts}}{2000} = 17.5$$

Answer

17

[ms: 16 or 17]



21  $2^a \times 3 \times 5^2 = 600$

Work out the value of  $a$ .

You must show your working.

[3 marks]

$$600 \div 3 = 200$$

$$200 \div 25 = 8$$

$$2^a = 8$$

$$a = \underline{\hspace{2cm}} \quad 3$$

22

Expand and simplify fully  $5(\overbrace{3x+4}) - 2(\overbrace{x-1})$

[2 marks]

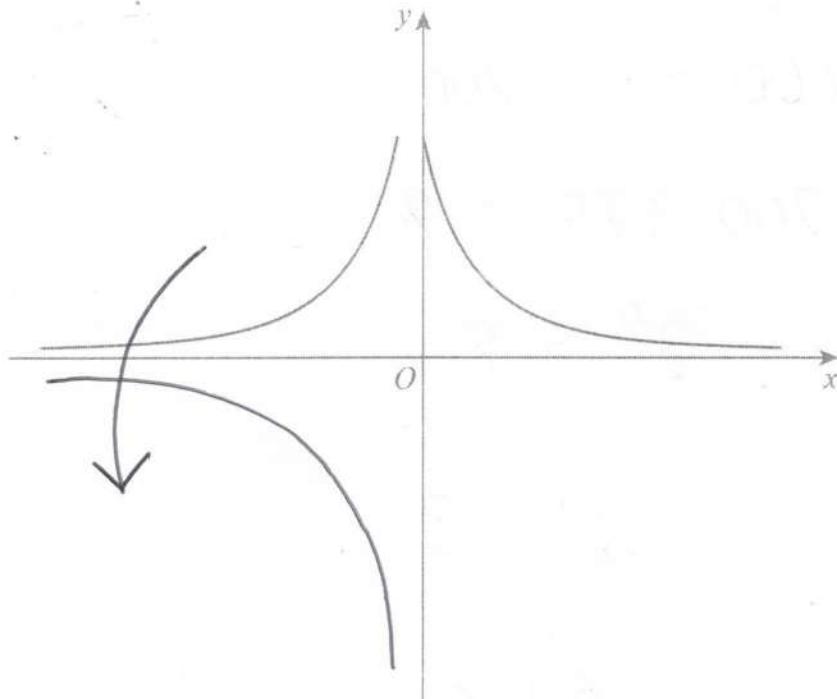
$$15x + 20 - 2x + 2$$

Answer  $\underline{\hspace{2cm}} \quad 13x + 22$



23

Erika tries to sketch the graph  $y = \frac{1}{x}$  with  $x \neq 0$



Make **two** different criticisms of her sketch.

[2 marks]

Criticism 1

Shouldn't contact y-axis

Criticism 2

Values when  $x < 0$  give  $y < 0$

[ms allows sketches as answers]



24

Sunita is  $x$  years old.

Beth is one year younger than Sunita.

Joel is double Sunita's age.

The mean of their ages is 5

$$\text{so total} = 5 \times 3 = 15$$

How old is Joel?

S

B

J

 $x$  $x-1$  $2x$ 

[5 marks]

$$x + x-1 + 2x = 15$$

$$4x - 1 = 15$$

$$4x = 16$$

$$x = 4$$

$$\text{Joel} = 2x = 2 \times 4$$

$$= 8$$

Answer

Turn over for the next question

Do not write outside the box



25

Work out  $2\frac{1}{3} \div \frac{4}{5}$

Give your answer as a mixed number.

[4 marks]

$$\frac{7}{3} \times \frac{5}{4} = \frac{35}{12}$$

$$35 \div 12 = 2 \text{ r}11$$

Answer

$$2\frac{11}{12}$$

END OF QUESTIONS



25

Work out  $2\frac{1}{3} \div \frac{4}{5}$

Give your answer as a mixed number.

[4 marks]

$$\frac{7}{3} \times \frac{5}{4} = \frac{35}{12}$$

$$35 \div 12 = 2 \text{ r}11$$

Answer

$$2\frac{11}{12}$$

END OF QUESTIONS

