

Please write clearly, in block capitals.

Centre number

Candidate number

Surname \_\_\_\_\_

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

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

# GCSE MATHEMATICS

# F

Foundation Tier Paper 2 Calculator

Exam Date

Morning

Time allowed: 1 hour 30 minutes

### Materials

For this paper you must have:

- a calculator
- mathematical instruments.



### Instructions

- Use black ink or black ball-point pen. Draw diagrams in pencil.
- 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.
- 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	
<b>TOTAL</b>	

Answer **all** questions in the spaces provided.

**1** What is 18 as a percentage of 72 ?

Circle your answer.

**[1 mark]**

18%

20%

25%

40%

**2** Which of these are units of volume?

Circle your answers.

**[1 mark]**

$\text{cm}^3$

$\text{kg}^3$

cubic metre

$\text{m}^2$

**3 (a)** Which of these values could represent a probability?

Circle your answer.

**[1 mark]**

-0.2

1.1

0.8

$\frac{6}{5}$

- 3 (b)** A fair ordinary dice is rolled once.  
Circle the probability of rolling a 3 or a 4

[1 mark]

$$\frac{1}{6}$$

$$\frac{2}{6}$$

$$\frac{3}{6}$$

$$\frac{4}{6}$$

- 4** Simplify  $12x^2 - 8x^2 - 5x + 2x$

[2 marks]

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Answer \_\_\_\_\_

**Turn over for the next question**

- 5 Bob stacks 20 bricks in one minute.  
He assumes he can continue at the same rate.

He says,

“I will stack 8400 bricks in 7 hours.”

Tick **one** box to show whether he is likely to be accurate.

No, he is likely to stack **fewer** bricks

Yes, he is likely to be accurate

No, he is likely to stack **more** bricks

Give working and a reason to support your answer.

[2 marks]

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- 6 Factorise  $18x - 42y + 30z$

[2 marks]

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Answer \_\_\_\_\_

7 An experiment has four outcomes.

Outcome	A	B	C	D
Probability	0.1		0.2	0.3

Circle the probability of outcome B.

**[1 mark]**

0.15

0.25

0.4

0.6

**Turn over for the next question**



9 Complete this pay statement.

[4 marks]

Number of hours worked	Pay per hour	Pay
35	£14.30	£ _____
7	£18.80	£ _____
4	£21.45	£ _____
		<b>Total pay = £ _____</b>
<b>Deductions</b>		
Tax		£64.80
National insurance		£85.60
		<b>Total deductions = £ _____</b>
Take home pay = Total pay – Total deductions		£ _____

Turn over for the next question

10 Work out  $5\frac{1}{4} + \frac{1}{2} \times \frac{2}{3}$

Give your answer as a mixed number.

[2 marks]

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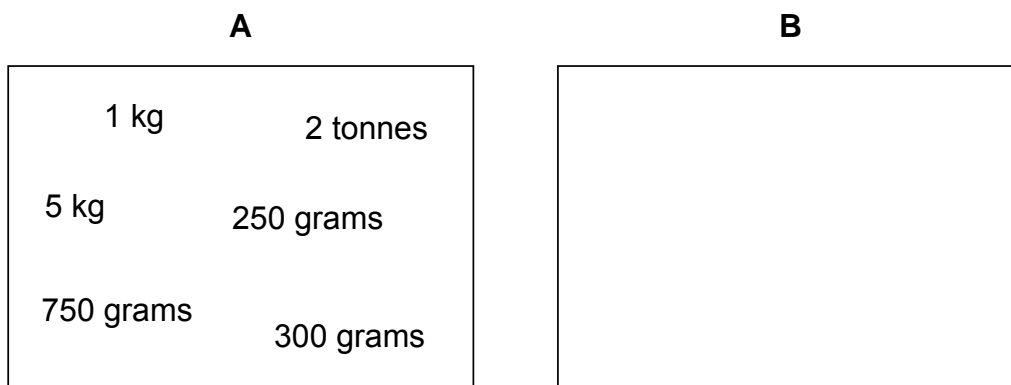
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Answer \_\_\_\_\_



- 11 In rectangle A there are six masses.



- 11 (a) Show that the sum of the **six** masses is 2007.3 kilograms.

[3 marks]

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- 11 (b) Three of the masses are moved from A to B.  
The mean of the masses in B is now 2.1 kilograms.

Which **three** masses move?

You **must** show your working.

[3 marks]

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Answer \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_

**12** I am thinking of a number.

It has two digits.

It is 3 more than a number that is **both** a square and a cube number.

Is the number I am thinking of a prime number?

Tick a box.

Prime

Not prime

You **must** show working to support your answer.

**[2 marks]**

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**13** Before an election,  
23% said they would vote for A  
9% said they would vote for B  
20% said they would **not** vote.

These all voted as they said.

The rest of the population actually voted for A and B in the ratio 1 : 2

**13 (a)** Who got the most votes?

You **must** show your working.

**[4 marks]**

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Answer \_\_\_\_\_

**13 (b)** 612 people did **not** vote.

How many did vote?

**[2 marks]**

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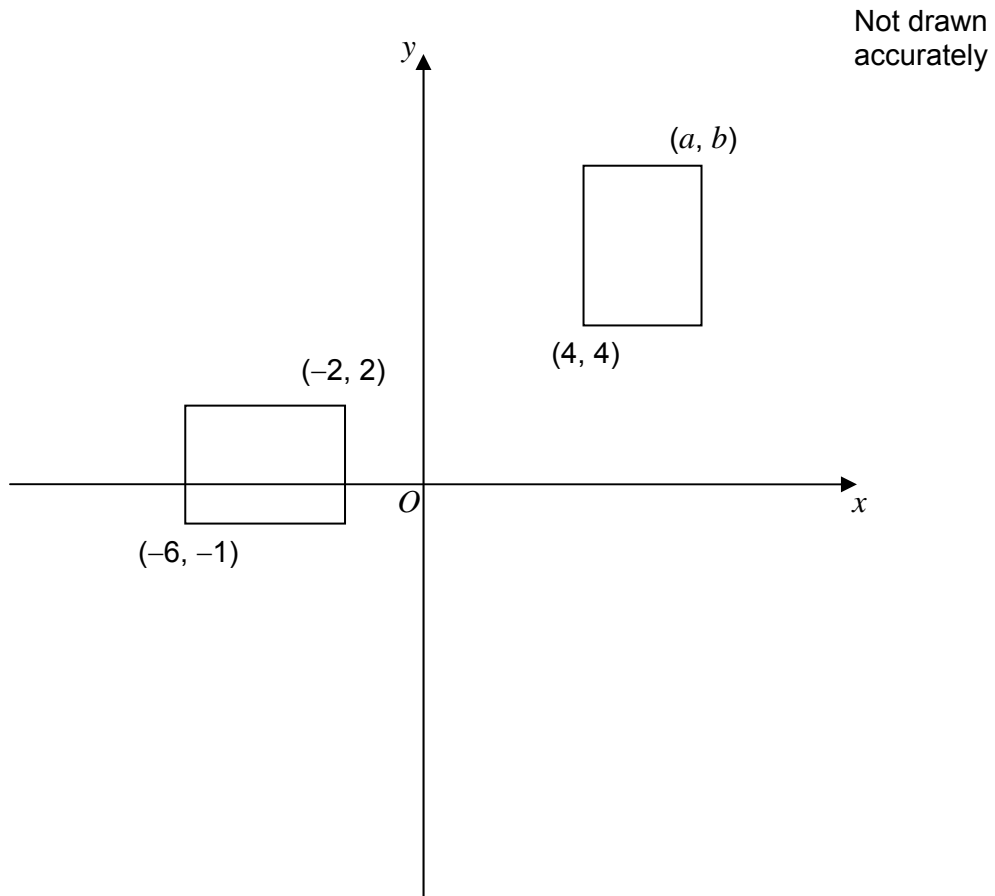
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Answer \_\_\_\_\_

- 14 Two rectangles are shown on the grid.



The rectangles are **congruent**.

Work out the values of  $a$  and  $b$ .

[4 marks]

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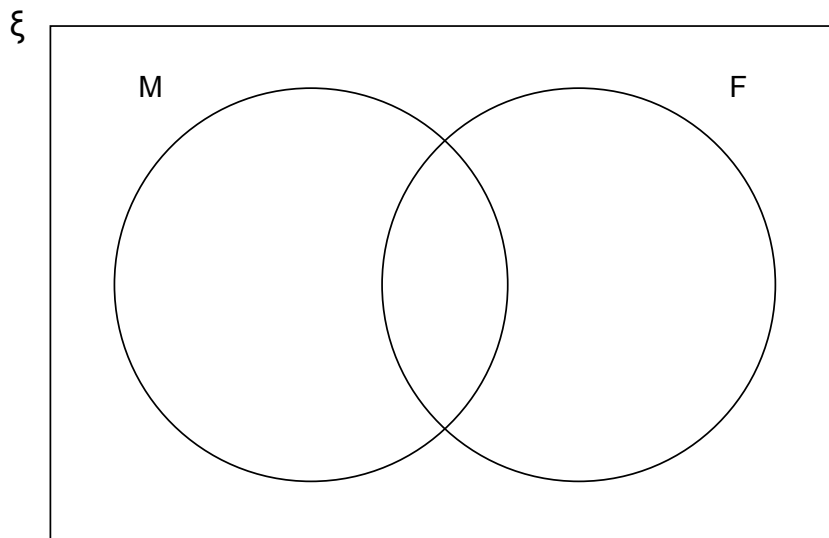
$$a = \underline{\hspace{2cm}} \quad b = \underline{\hspace{2cm}}$$

15 In the Venn diagram

$\xi$  = Whole numbers from 1 to 12 inclusive

M = Multiples of 3

F = Factors of 24



15 (a) Put the numbers from 1 to 12 in the Venn diagram.

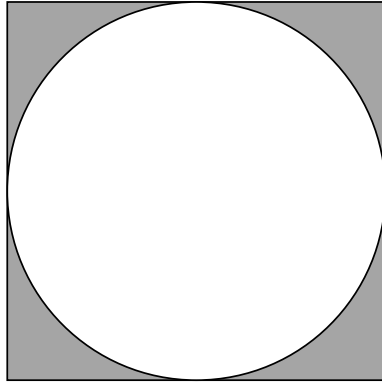
[3 marks]

15 (b) Complete the table to show **how many** numbers are in each part of the Venn diagram.

[3 marks]

	Multiples of 3	Not multiples of 3	Totals
Factors of 24			
Not factors of 24			
Totals			12

- 16 The diagram shows a circle of radius 7 cm inside a square.



Not drawn  
accurately

Work out the shaded area.

[4 marks]

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Answer \_\_\_\_\_  $\text{cm}^2$

17 The  $n$ th term of a sequence is  $3n^2$

17 (a) Work out the value of the 15th term.

[2 marks]

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Answer \_\_\_\_\_

17 (b) What is the position of the term in the sequence that is the first one with a value greater than 1000 ?

[3 marks]

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Answer \_\_\_\_\_

18  $x : y : z = 2 : 3 : 5$

Circle the value of  $x$  as a fraction of  $x + y + z$

[1 mark]

$$\frac{1}{5}$$

$$\frac{1}{4}$$

$$\frac{2}{3}$$

$$\frac{2}{5}$$

**19 (a)** Circle the number that is an integer power of 4

**[1 mark]**

2

8

16

32

**19 (b)** Work out  $5^{12} \div 5^3 \times 5^2$  as a power of 5  
Circle your answer.

**[1 mark]**

$5^6$

$5^8$

$5^9$

$5^{11}$



20 £4000 is invested at 1.5% compound interest.

20 (a) Show that the value of the investment after 2 years is £4120.90

[2 marks]

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20 (b) In the third year the interest rate falls to 1.4%  
In the fourth year the interest rate falls to 1.35%

Will the interest for year 4 be more or less than the interest for year 3 ?

Tick a box.

More

Less

You **must** show your working.

[4 marks]

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Turn over for the next question



- 21 (b)** Using the till receipts, the manager works out the actual mean amount spent for each group.

Amount spent, £A	Number of customers	Actual mean amount spent
$0 < A \leq 10$	18	£4.50
$10 < A \leq 20$	15	£15.00
$20 < A \leq 30$	7	£23.40

Without further calculation, decide whether the actual mean of the 40 customers will be different from the estimated mean in part (a).

Tick a box.

Higher

Lower

The same

Give a reason for your answer.

**[2 marks]**

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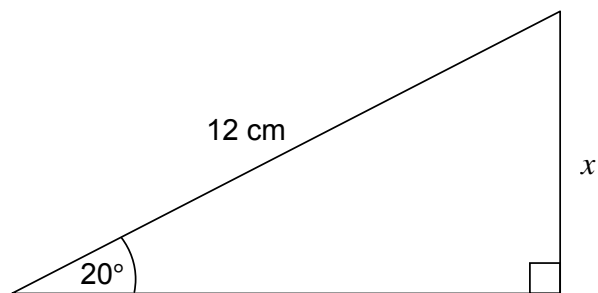


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**Turn over for the next question**



23 Work out the length  $x$ .



Not drawn  
accurately

[2 marks]

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Answer \_\_\_\_\_ cm

24 Write 140 as a product of prime numbers in index form.

[3 marks]

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Answer \_\_\_\_\_

**END OF QUESTIONS**

**There are no questions printed on this page**

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