Please write clearly in block capitals.

Centre number | | | | | | Candidate number | | | | |

Surname _____

Forename(s) _____

Candidate signature _____

I declare this is my own work.

GCSE
MATHEMATICS

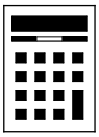
F

Foundation Tier Paper 2 Calculator

Friday 10 November 2023 Morning Time allowed: 1 hour 30 minutes

Materials

For this paper you must have:
- a calculator
- mathematical instruments
- the Formulae Sheet (enclosed).



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	
22–23	
24–25	
TOTAL	

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

Do not write outside the box

1 Convert 800 centimetres to metres.

[1 mark]

Answer _____ m

2 The temperature was –11°C and **increases** by 5°C

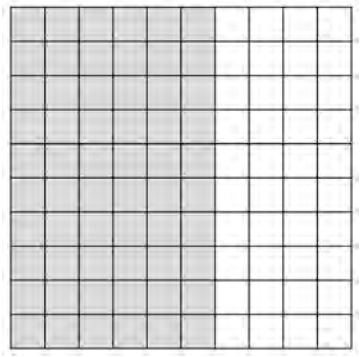
Work out the new temperature.

[1 mark]

Answer _____ °C

Do not write outside the box

3 (a) Here is a grid.

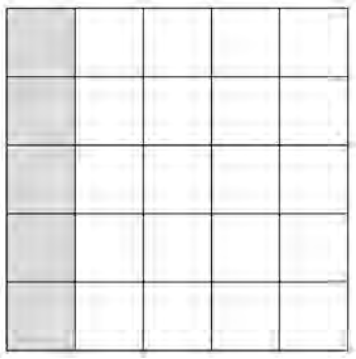


What percentage of the grid is shaded?

[1 mark]

Answer _____ %

3 (b) Here is a different grid.



What percentage of the grid is shaded?

[1 mark]

Answer _____ %

4

Do not write outside the box

4 (a) Solve $\frac{x}{3} = 6$

[1 mark]

$x =$ _____

4 (b) Solve $2x + 3 = 27$

[2 marks]

$x =$ _____

5 Work out $\frac{9}{4}$ as a decimal.

[1 mark]

Answer _____

Do not write outside the box

6 Complete the bank statement.

[3 marks]

Date	Description	Credit (£)	Debit (£)	Balance (£)
01/11/2021	Starting balance			736.28
05/11/2021	Rent		450.00	
14/11/2021	Refund	25.00		
27/11/2021	Wages	1830.29		

7 Put all the numbers 4, 5, 6, 10 and 20 into the grid
so that the numbers in each row and each column **multiply** to 120

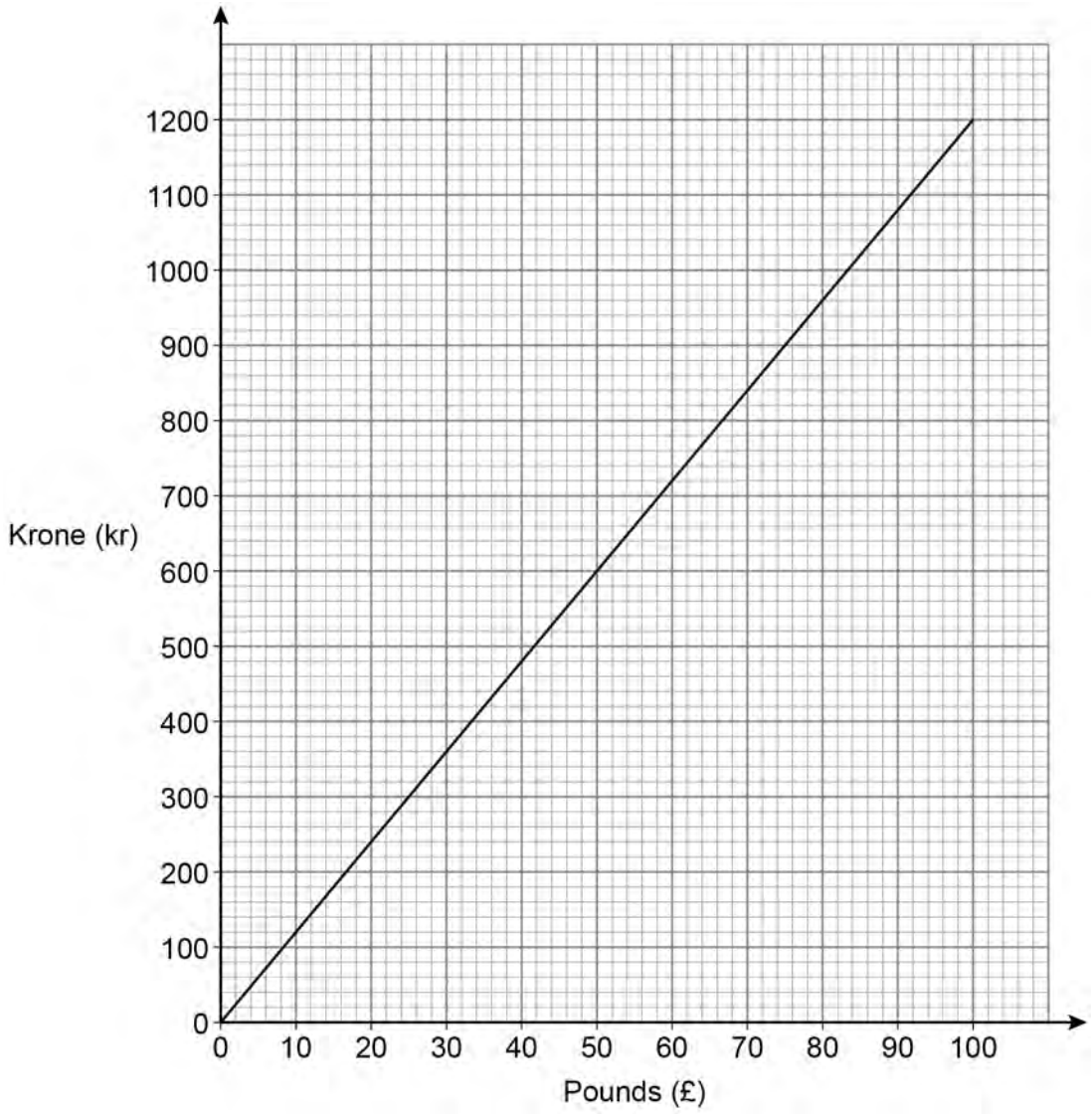
[3 marks]

	3		120
	2	12	120
		1	120
120	120	120	

10

Do not write outside the box

8 The graph below is used to convert between pounds (£) and Norwegian krone (kr).



8 (a) Convert 720 krone into pounds.

[1 mark]

Answer £ _____

8 (b) Convert £500 into krone.

[2 marks]

_____

_____

Answer _____ kr

Do not write outside the box

9 Connor is estimating the answer to 385 + 1479

9 (a) He rounds each number to the nearest 10

Work out his estimate.

[2 marks]

Answer _____

9 (b) Connor says,

"My estimate will be more than the exact answer."

How does he know this **without working out the exact answer**?

[1 mark]

Turn over for the next question

6

Do not write outside the box

10 Here are the salaries, in £, of the 6 workers in a company.

18 300 20 700 21 500 21 500 21 500 99 000

10 (a) Work out the mean salary.

[2 marks]

Answer £ _____

10 (b) Why is the mean **not** the best average to represent the salaries?

[1 mark]

Do not write outside the box

11 Zoe's mass is 55 kilograms.

Work out her mass in stones and pounds.

Use 1 kilogram = 2.2 pounds

14 pounds = 1 stone

[3 marks]

Answer _____ stones _____ pounds

Turn over for the next question

6

Do not write outside the box

12 (a) A sauce is made from cream and stock in the ratio

cream : stock = 1 : 6

How much **sauce** can be made using 80 millilitres of cream?

[2 marks]

Answer _____ ml

12 (b) A different sauce is made from olive oil and tomato juice in the ratio

olive oil : tomato juice = 1 : 14

What fraction of this sauce is olive oil?

[1 mark]

Answer _____

Do not write outside the box

13 Multiplying y by 6 gives the same result as adding 15 to y

13 (a) Write this as an equation.

[2 marks]

Answer _____

13 (b) Show that the value of y is **not** 4

[1 mark]

Turn over for the next question

6

Do not write outside the box

14 A golf club is organising a trip for 42 people.

The costs are shown in the table.

Minibus hire	£450 per minibus
Fuel	£26 per minibus
1 game of golf	£18.50 per person

Each minibus can hold 15 people.

Each person will play 2 games of golf.

The cost of the trip will be shared equally by the 42 people.

Work out the cost per person.

[5 marks]

Answer £ _____

Do not write outside the box

15 An ordinary fair dice is rolled ten times.

Here are the first nine results.

6 1 3 2 1 5 5 5 5

Write down the probability of getting a 5 on the tenth roll.

[1 mark]

Answer _____

16 $r : w = 1 : 4$

Write down the ratio $r^2 : w^2$

[1 mark]

Answer _____ : _____

Turn over for the next question

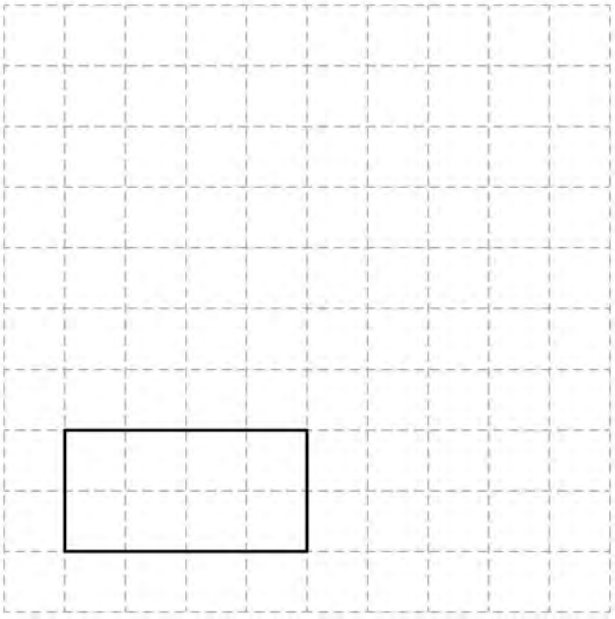
7

Do not write outside the box

17 (a) A rectangle is drawn on a square grid.

On the grid, draw a **congruent** rectangle.

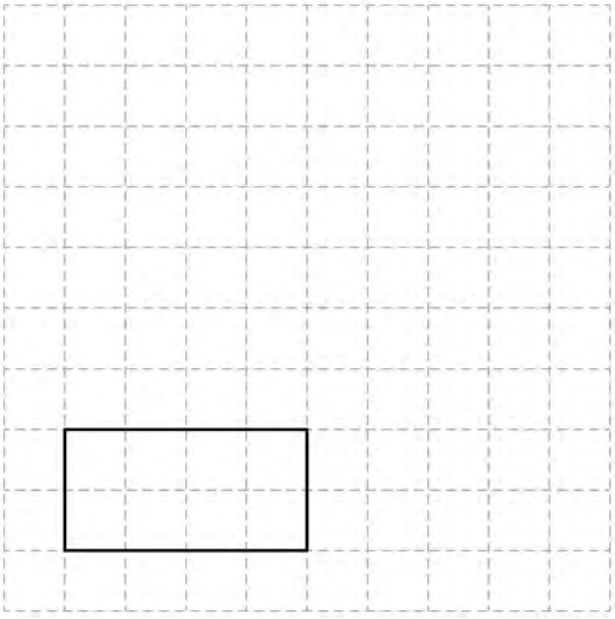
[1 mark]



17 (b) Here is the rectangle on a different square grid.

On this grid, draw a **similar** rectangle which is **not** congruent.

[1 mark]



Do not write outside the box

18 A box contains 36 chocolates.

The chocolates are milk or dark and have hard or soft centres.

$\frac{4}{9}$ of the chocolates have soft centres.

There are twice as many milk chocolates as dark.

5 of the dark chocolates have soft centres.

18 (a) Complete the two-way table.

[4 marks]

	Hard centre	**Soft centre**
Milk		
Dark		5

One chocolate is chosen at random.

18 (b) What is the probability that it is a dark chocolate with a soft centre?

[1 mark]

Answer _____

18 (c) What is the probability that it has a hard centre?

[1 mark]

_____

Answer _____

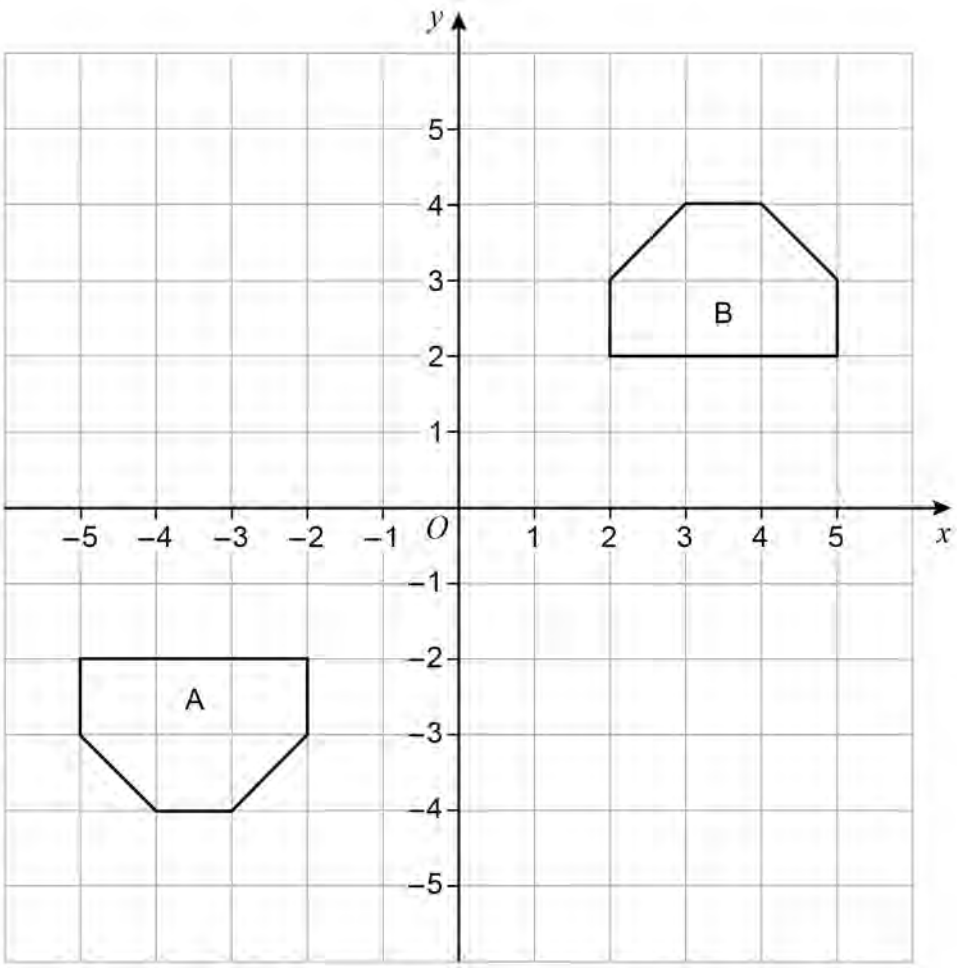
8

Turn over ►

Do not write outside the box

19 Describe fully the **single** transformation that maps shape A to shape B.

[3 marks]



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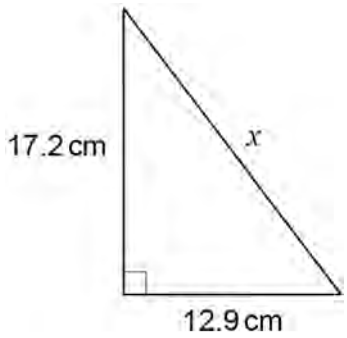
20 Use Pythagoras' theorem to work out the value of x.

[3 marks]



Not drawn accurately

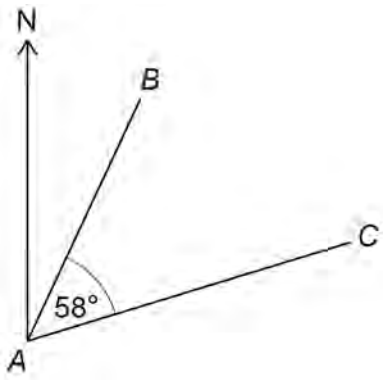
$x =$ _____ cm

Turn over for the next question

6

Do not write outside the box

21



Not drawn accurately

The 3-figure bearing of *B* from *A* is 021°

Work out the 3-figure bearing of *C* from *A*.

[2 marks]

Answer _____ °

22 How many edges does a triangular prism have?

[1 mark]

Answer _____

Do not write outside the box

23 Three shops sell the same type and size of lip balm stick.

Shop A

£2.39 each

Shop B

£3.08 each

Buy one,
get one half price

Shop C

Pack of 4

Was £11.40

Now $\frac{1}{6}$ off

Which shop is the best value for 8 sticks and what is the total cost in that shop?
Show working to support your answer.

[5 marks]

Shop _____ Total cost £ _____

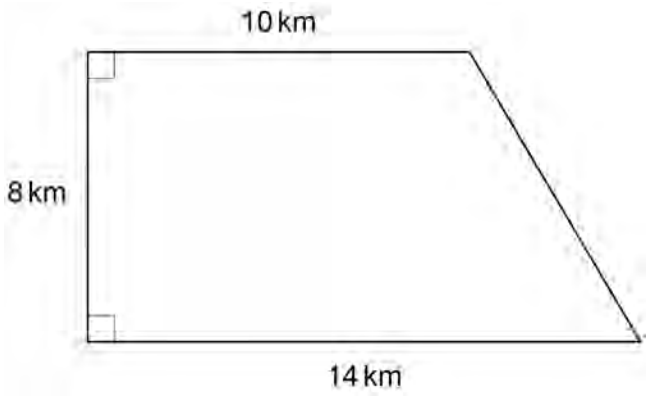
8

Turn over ►

Do not write outside the box

24 The boundaries of a city form a trapezium.

Not drawn accurately



Population density = $\frac{\text{number of people}}{\text{area}}$

The population density of the city is 9450 people per square kilometre.

Work out the number of people who live in the city.

[4 marks]

Answer _____

Do not write outside the box

25 Round 1 of voting for Head Student is taking place in a school.

25 (a) To reach round 2, a student must receive **at least** $\frac{4}{15}$ of the votes.

What is the largest possible number of students that can reach round 2?

Circle your answer.

[1 mark]

15 11 3 4

25 (b) There are 900 votes in round 1

Sean receives 180 votes.

Amy draws a pie chart to represent the results.

Here is her method to work out the angle needed for Sean.

180 ÷ 900 × 100 = 20

The angle should be 20°

Is Amy's method correct?

Tick a box.

Yes ☐ No ☐

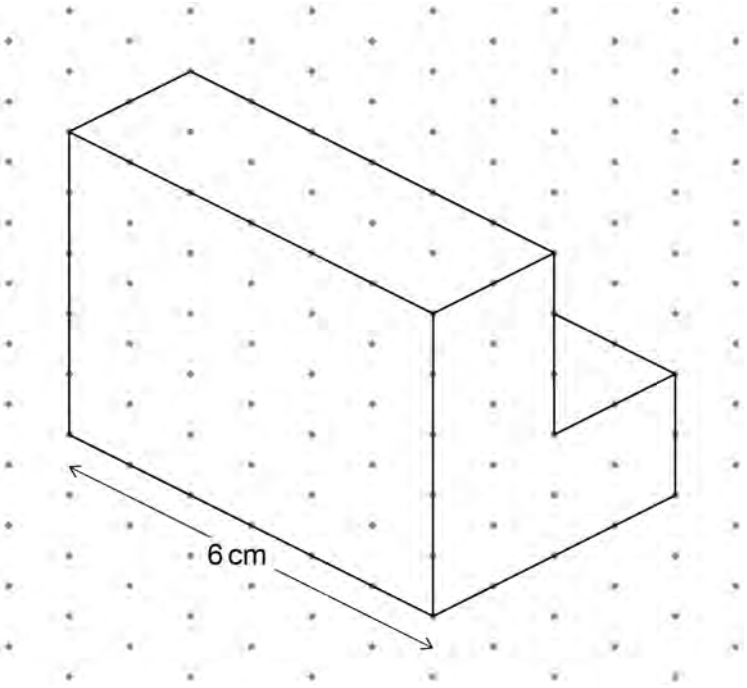
Give a reason for your answer.

[1 mark]

6

Do not write outside the box

26 Here is a prism drawn on an isometric grid.



Work out the volume of the prism.

[3 marks]

Answer _____ cm^3

Do not write outside the box

27 Tasha drove 198 miles.

Her average speed for the first 3 hours was 45 miles per hour.

Her average speed for the rest of the journey was 31.5 miles per hour.

Work out her average speed for the whole journey.

[4 marks]

Answer _____ miles per hour

Turn over for the next question

7

Do not write outside the box

28 Here is the term-to-term rule for a sequence.

Double the previous term and add 3

The first three terms of the sequence are $a + 1$ $2a + 5$ $4a + 13$

Show that the sum of the first **four** terms is a multiple of 3

[3 marks]

Do not write outside the box

29 A straight line passes through (3, 14) and (12, 32)

Work out the equation of the line.

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

[3 marks]

Answer _____

END OF QUESTIONS

6

There are no questions printed on this page

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ANSWER IN THE SPACES PROVIDED

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Question number	**Additional page, if required.** **Write the question numbers in the left-hand margin.**

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